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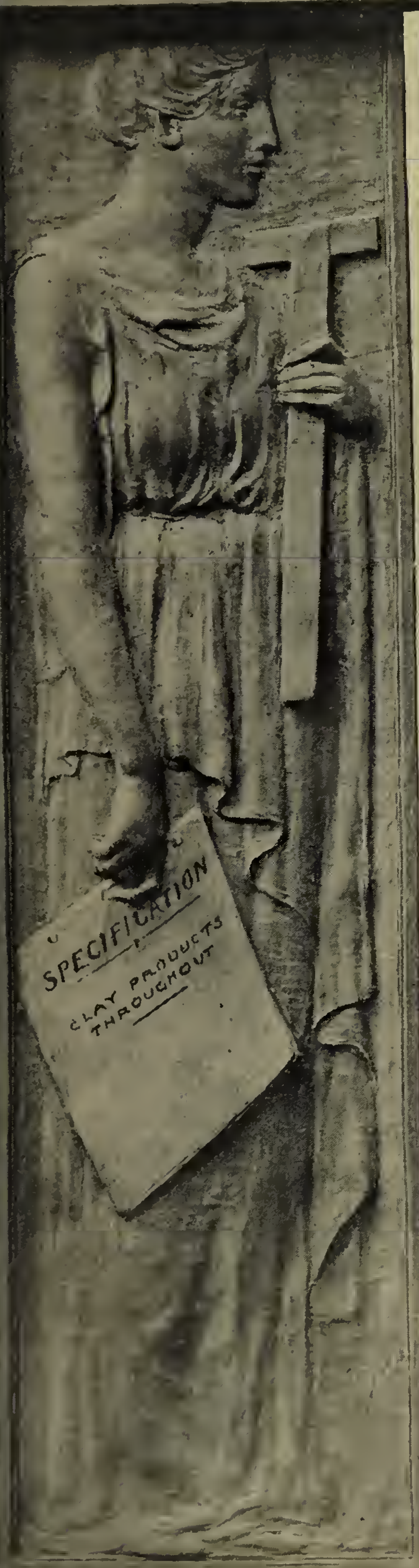

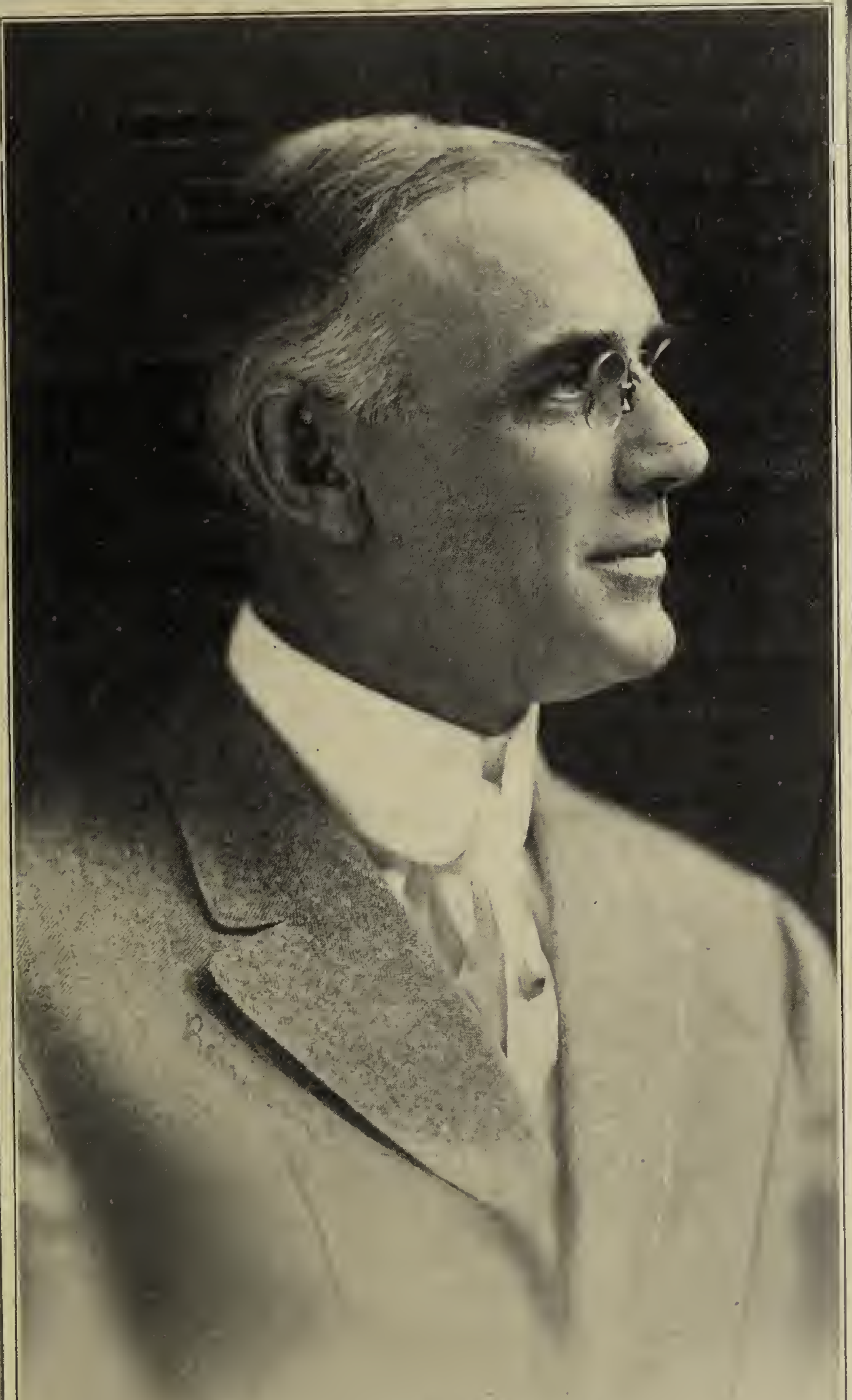

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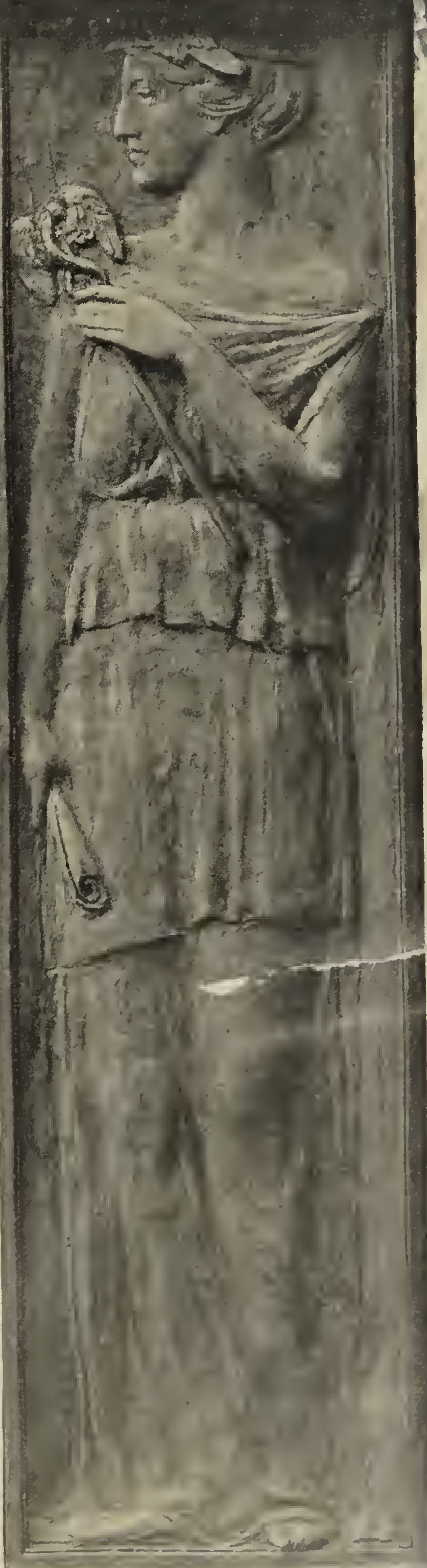

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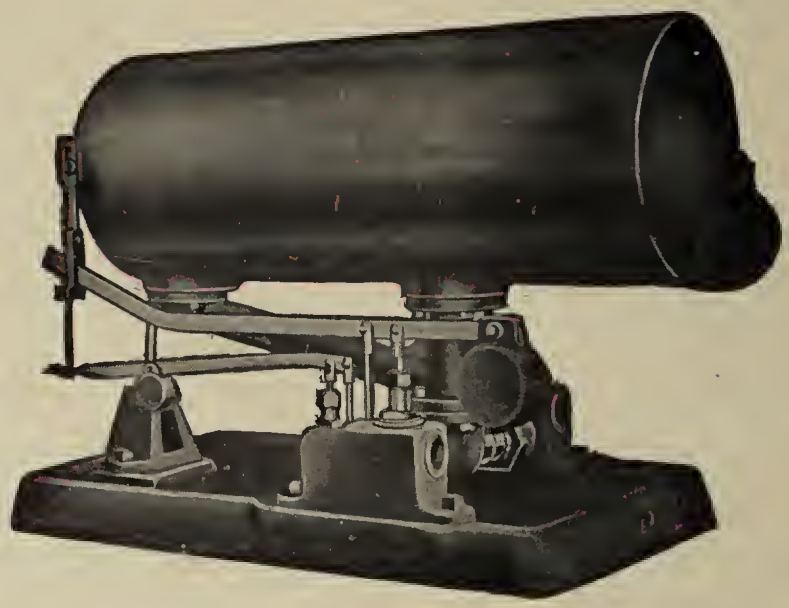

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A Big Man Who Does Big Things in a Big Way

F. Lawson Moores

President Face Brick Dealers' Association of America

MEN who have made history—who have stepped from the ranks of the privates and seized the reins of power, who have dominated and controlled other men—who have forced their own individuality into whatever movement they entered—these men, with few exceptions, have been large men.

There have been but few Bonapartes. There have been but few Washingtons and few Alexander Stephens. Nature made big men to do big deeds, so it has been said, and evidently Nature followed this rule when it resolved to take a hand in making one F. Lawson Moores, for Mr. Moores is a big man—big in stature, big in brains, big in deeds, big in everything he does.

F. Lawson Moores stands six feet-three in his holeproofs. He probably would have grown still taller in stature had he had the time, for Nature has demanded much of him and if his height had kept pace with his accomplishments Goliath would have been a pigmy in comparison.

F. Lawson began to grow the very minute his nurse first laid him in his mother's arms and he continued to grow in stature until he reached manhood and decided it was time to call a halt and begin to do something else. From that day on he applied himself to growing big in other ways and the application was so well made Nature has no complaint and he follows closely the formula—big men and big deeds.

Mr. Moores is a face brick dealer and Cincinnati is the scene of his operation. He has not been so very long selling face brick but it does not take years for a man of his calibre to become a commanding figure in whatever line of endeavor he may undertake.

Accustomed to being a leader—because he is a big man and big men naturally take to leadership, he soon dominated the face brick field in his locality. And then, when the face brick dealers of the country decided that it was to their interest to form an association for mutual protection, they looked about them and, of course, F. Lawson, being six-feet-three, easily was seen above the shoulders of the others that blocked the horizon and F. Lawson just naturally was tabbed and given the leadership.

Of course there may be more to the story of just how F. Lawson became president of the recently organized Face Brick Dealers' Association of America, but that would make another narrative and this sketch is concerning itself only about the man and what he has done and not how and why he did it.

When F. Lawson joined in the face dealers' movement he did not sit in the back of the hall where the first meeting was held and wait until someone had laid the plans and mapped out the course. What he did do was to take a seat in the front row and become a part of the meeting and become an active quantity in what was done.

He had certain policies—certain standards of conducting his own business. These were broad-minded rules and they were the kind that every face brick dealer should employ if he wishes to encourage fair competition. So F. Lawson saw that these policies came to the front and the Face Brick Dealers' Association of America, which he presides over today, is banking on making a great success out of the movement.

BRICK
and CLAY RECORD

VOL. XLIII. CHICAGO, JULY 1, 1913 Number 1

Agree on Face Brick Reforms

Delegates from Dealers' and Manufacturers' Associations Meet and Decide on Harmony Platform

WITH the meeting of representatives of the American Face Brick Association, the Ohio Face Brick Association, and the recently organized Face Brick Dealers Association at Columbus, Ohio, June 17, a nation wide movement was launched to revolutionize the manufacture and marketing of face brick, and place it at the head of all building materials for homes, for factories and for public buildings when used in conjunction with hollow building tile and common brick.

Both associations—through representatives present, agreed to work in harmony and co-operate in every way possible in carrying out the work outlined. If the plans discussed and arranged in tentative form are carried out it will mean:

THAT a national wide advertising campaign is to be inaugurated for the purpose of creating a demand for face brick in every section of the country.

THAT an open price policy will be pursued by the members of both associations.

THAT uniform standards in the manufacture and sale of brick will be maintained.

THAT a traffic department will be provided for.

Those present at the meeting were:

F. Lawson Moores, president of the Moores-Coney Co., Cincinnati, Ohio, building supply dealers, and president of the Face Brick Dealers Association of America.

R. L. Queisser, president of the Queisser-Bliss Co., face brick dealers, Cleveland, Ohio, secretary-treasurer of the Face Brick Dealers Association of America.

Lincoln G. Kilbourne, president of the Columbus Brick and Tile Co., Columbus, Ohio, and president of the American Face Brick Association.

R. D. T. Hollowell, of Pittsburgh, secretary-treasurer of the American Face Brick Association.

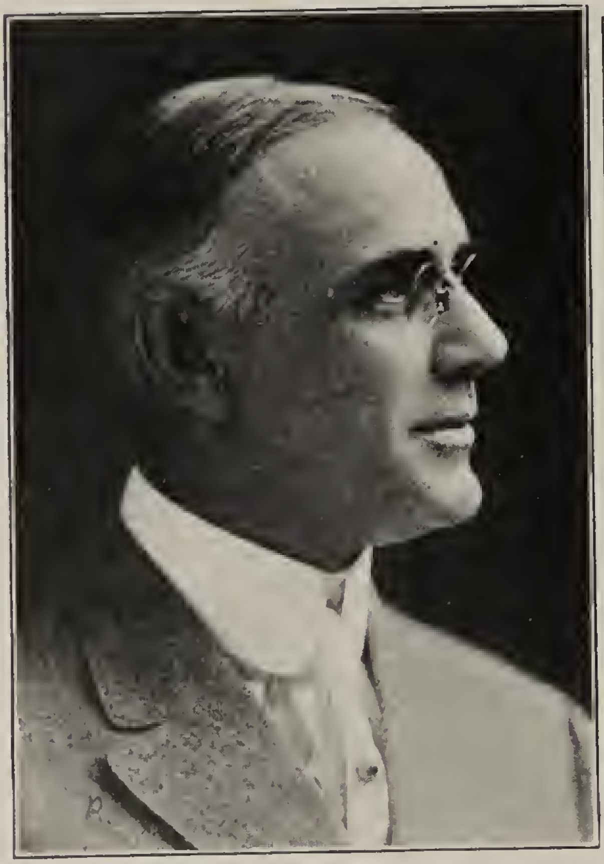
J. M. Adams, secretary and general manager of the Iron Clay Brick Co., of Columbus, Ohio, the first president of the American Face Brick Association.

W. H. Hoagland, general manager of the Claycraft Brick Co., of Columbus, Ohio, and secretary of the Ohio Face Brick Association.

In addition to the above delegates representing the three associations, C. L. Rorick, secretary of the Kenfield-Leach Co., publishers of "Brick and Clay Record," was in attendance and offered the services of the magazine in any way required in promoting the interests of the work proposed.

The meeting was held at the Kaiserhof Hotel and was informal in its nature. President Moores of the Face Brick Dealers Association presented the ten cardinal principles laid down by his organization with the view of showing the delegates from the other associations the work it proposed to do. These follow:

1. To promote publicity in the transaction of business.
2. To promote cordial and friendly relations among members, thereby removing, so far as possible, misunderstandings and ill feelings due to spreading of false reports and baseless charges, and to ignorance of conditions prevailing in the industry.
3. To collect and disseminate accurate information concerning the manufacture and sale of face-brick and other building materials, including correct statistics regarding the capacities and output of any and all plants engaged in the manufacture of face-brick together with periodical reports regarding outputs, shipments, orders and prices; to collect, compile and publish accurate information regarding labor conditions, and any and all conditions affecting the industry generally; it being one of the underlying convictions of the Association that intelligent competition is far better for the industry than ignorant, and that the public buying such material will share in the profits gained by the elimination of much waste. In this connection, it is one of the objects of the Association to ultimately make the information gathered official in character, and publish statistical results for the information of the general public.
4. To maintain high and uniform standards in the manufacture and sale of face-brick to the end that customers may be assured of the quality of such materials as they may purchase.



Top Row: L. G. Kilbourne, J. M. Adams and R. L. Quiesser.
Bottom Row: F. Lawson Moores and R. D. T. Hollowell.

5. To devise ways and means for promoting the use of face-brick.

6. To take up, intelligently discuss, and, so far as may be legally done, correct abuses in the many traffic problems which can be dealt with only by an organization.

7. To co-operate with customers, manufacturers and with each other in the correction of unfair and pernicious practices and customs, and, in this connection, to work out, so far as practicable, uniform contracts which will be fair and satisfactory to the trade and to the public.

8. To introduce the open price policy: i. e., to bring into the open all competitive conditions, without, in any manner, directly or indirectly restraining the freedom of any member to quote price as it pleases, each member being free to compete, both with members and with non-members of this Association, and to the same extent as though this Association had no existence.

These principles received the hearty indorsement of the representatives from the two manufacturers organizations and brought forth the assurance of absolute co-operation.

The discussion of a proposed publicity movement was given considerable time and the American Face Brick Association felt disposed to father the idea in general, taking up the responsibility of the work on its own shoulders. President Kilbourne declared it the intention of his organization not only to carry on an extensive national campaign but also to encourage its members to enter into local newspaper advertising campaigns and to take space as individuals in architectural and building trades papers.

This association feels that this publicity work best can be conducted by its organization because through broad policy and an aggressive campaign it will be almost out of the question for other dealers—those outside of the Face Brick Dealers Association, to sell any other product than made by the members of the A. F. B. A.

One of the most important features of the proposed work of the three associations will be the establishment of some sort of trade mark which is to be placed on every brick sold under the authority of the American Face Brick Association. This trade mark is to be advertised extensively and with the idea of making it the sign of a standard of excellence and quality.

This plan will educate the buying public to use only the face brick of the members of the association and to look upon all other products with distrust.

The new constitution and by-laws of the Face Brick Dealers' Association are now on the press and advance proofs shown a representative of "Brick and Clay Record" indicate that this, the latest of the national associations in the clay product field, is going onto the battlefield with an aggresiveness that promises much.

The eight articles published above are from the constitution and give briefly the objects of the association. The eighth or last article treats on the open price plan which is depended upon to correct certain evils that have had a depressing effect on the face brick business.

Another article pledges the association to eliminate the unscrupulous dealer who makes contracts with plants that do not know the actual cost of their products and, tying them up for a period of years at an impossible figure, enters into the general market and demoralizes it.

Article IX of the constitution is a most significant one and sounds the keynote of the entire policy of the association. It reads:

"No member of this association shall enter into any agreement or understanding of any nature or kind whatsoever, the object of which is to restrain trade, limit competition, or do any act which is contrary to the spirit of the law, or which is contrary to the objects of this Association as set forth in this constitution."

The membership dues of the Face Brick Association has been fixed at $25 per year, and any individual, firm or corporation representing five or more face brick manufacturers and dealing regularly in face brick, is eligible.

R. L. Queisser, of the Queisser-Bliss Co., Cleveland, is secretary-treasurer of the new organization, and the other officers are as follows:

President—F. Lawson Moores, of the Moores-Coney Co., Cincinnati.

Vice Presidents—A. B. Meyer, of A. B. Meyer Co., Indianapolis; E. F. Knight, of the Buffalo Builders' Supply Co., Buffalo, N. Y.; W. G. Thomas, of Thomas Bros. & Co., Detroit, Mich.; L. W. Gaddis, of Gaddis-Harrison Co., Columbus, Ohio; Herman L. Matz, of the S. S. Kimbell Co., Chicago; F. J. Nixon, of Paine-Nixon Co., Duluth, Minn.; George Schwartz, of Ricketson & Schwartz, of Milwaukee, Wis. One vice-president from each state represented, to be added later.

Executive Committee—A. E. Bradshaw, Indianapolis, Ind.; W. A. Fay, Cleveland, Ohio; F. B. Holmes, Detroit, Mich.; F. Lawson Moores, Cincinnati; R. L. Queisser, Cleveland, Ohio.

These three associations—the American Face Brick Association, the Ohio Face Brick Association and the Face Brick Dealers' Association of America, working in unison with the various city face brick associations throughout the country, are going to do a great good to the face brick industry of the nation, and "Brick and Clay Record" urges its readers who are interested in this branch of the industry to get in touch with that association that represents their own interests the closest and affiliate with the work as outlined.

This journal has been foremost in advancing the association work in the industry and having no motive other than the unselfish one of seeing clay products placed on a high plane of business efficiency, believes its advice will be received as from an unbiased source.

U. S. Exonerates Officials in Chicago "Brick Trust" Case

Exoneration was given by the department of justice, June 28, to District Attorney Wilkerson at Chicago, his chief assistant, Elwood Godman, and former District Attorney Edwin W. Sims in connection with the prosecution of the alleged paving brick trust.

Not only did the department find that these officials had not been guilty of the slightest misconduct with reference to the men prosecuted, but the attorney general gave formal approval to their acts. The decision of the attorney general, as announced by the department, is regarded as a sharp rebuke to those who charged wrong doing on the part of the officials named.

Attorney John A. Brown, of Chicago, representing Mrs. A. J. Christopher, filed with the attorney general last week a protest against the dropping of the prosecution. He charged that improper influences were involved in the action of the district attorney's office in entering a nolle prosequi to the indictment of D. V. Purington and other brick trust defendants. He rested his charges on the allegations that Godman, while in charge of the prosecution, went into partnership with Mr. Sims, that Mr. Sims purchased a residence from D. V. Purington, and that subsequently the prosecution of Purington and his associates was dropped.

Attorney General McReynolds caused an inquiry into Brown's charges to be made and concluded they are without foundation. He issued instructions that Attorney Brown be informed that there is no evidence affording the slightest suspicion of impropriety in the disposition of the brick case.

James A. Fowler, assistant attorney general in charge of trust prosecutions, gave this statement of the affair:

"Mr. Godman made a report on the brick trust case late last fall. His report disclosed that the indictment had been returned more than three years after the date of the contract which constituted the principal evidence of the existence of a brick trust. The transaction therefore had been outlawed by the statute of limitations. To have proceeded with the prosecution would have involved the government in useless expense with certain defeat as the result. Therefore, on Feb. 10, I instructed the district attorney to enter a nolle prosequi to the indictment."

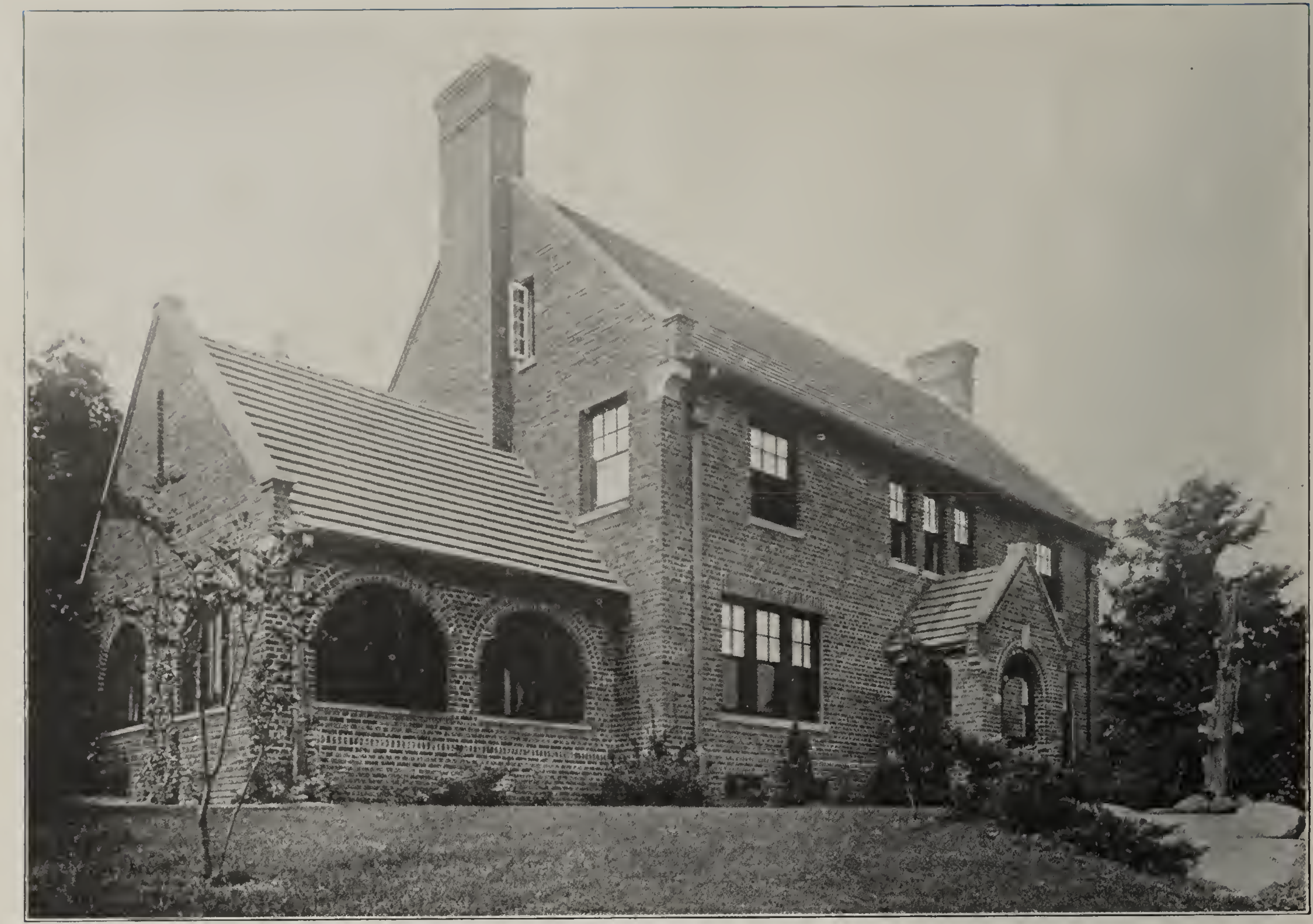
IMMEDIATE RELIEF DENIED BRICKMAKERS

Greater New York Brick Co. Directors Fail to Evade Individual Prosecution.

Contrary to expectations, the suggested conference between representatives of the district attorney's office of New York City and the counsel for complainants and defendants, in the complaint against the Greater New York Brick Company, did not take place, and the case proceeded with the defendant company still facing a criminal charge of commercial conspiracy to restrain trade.

Just now the action may be likened to that of a prospective complainant appearing before a magistrate, as in a case of assault, the magistrate listening to the petitioner's grievance and if, in his judgment, the facts warrant further action, he entertains a complaint and, on the evidence, either discharges the party against whom the complaint is lodged, or holds him for the grand jury. It is within the province of the magistrate to hold some of the defendants, in the event of the complaint being brought against a list of officers and directors of a corporation, and freeing others from present liability to prosecution.

A hearing was set for Monday, June 30th, at two o'clock in the afternoon in the Essex Market Court in the City of New York, Magistrate John J. Freschi presiding.



"We Drifted Until We Saw a Brick with a Human Touch of Warmth"

Builds Brick House With a Camera

OWNER TELLS OF UNIQUE PLAN FOLLOWED IN SELECTION OF BOTH SITE AND STRUCTURE

By William F. Patterson

The following story of a suburban home and how and why it was built of imperishable clay products, from the cellar to the roof, appeared in the July issue of "Suburban Life," and coming from this unbiased source, as it did, it carries with it an unusually strong argument for the building material which "Frost, nor Fire, nor Flood, nor Time can Destroy."

I HAVE often wondered if to a nature-lover—to one who finds companionship with the wild things—the idea of home doesn't come in a different way than it does to one whose life is engrossed in business or city ways and things. Communion with the birds and beasts and a study of their ways teach that the homes of the wild things are made by themselves, are never out of harmony with their environment and so are beautiful, and it would readily follow that this teaching should be carried out in the building of the human home.

It was so with us at any rate. We found our spot, not by following city-wise requirements of near the railroad station and the stores, and the ground all cleared and a contract house built upon it, but following our own instincts and finding the home-site already preempted by the catbirds and the chewinks. A spot where viburnums and dogwoods grew under pines, where there was bayberry for fragrance, and sumac and the high-bush blueberry for color in the fall.

It was at the end of the town, and a wild spot—some parts of it are wild yet and will always be—and we had to literally cut our path through brambles and scrub growth to a pine tree near the prospective site for the house, and climb that tree to look over and study the grade.

A friend persuaded us to have a landscape architect draw up a plan for improvement; but when, in the tentative sketch, he had cut out as worthless a beautiful clump of young sweetgums, white birch, cedars, and dogwoods—a spot that was a glory all the year round—we asked for his bill and politely bowed him out, and went back to the teachings of our bird friends to go it alone.

Studies Site of House from Every Angle.

Before we did any clearing, we studied that plot of three acres from every angle; by sunlight, starlight, moonlight, in clear weather, in rain, in snow. We made a pretty accurate map with every tree and sapling and bush; we knew what was growing there, and we studied what would grow there. We knew the grades and how the water flowed in the heavy downpours. Before we even started on the plans of our house, we knew our ground and loved it.

Then came the next step. We may like to walk at times through brambles and bushes, but we cannot well live in them all the time, and so we cleared a spot with the idea that near the house the grounds must be open—even slightly formal for the sake of repose—and then gradually worked it off and laced it to the wild in the rear and at the edges and corners. It wasn't easy to do, but it was mighty interesting, and again we studied, studied, studied, until we felt we knew our way.

We tried an experiment that was new to us, but may be as old as the hills. Where we wanted the house, we drove in sticks, ten feet apart, each with a white rag on it, and then from across the street took a panoramic photograph of the grounds, and in printing the picture blocked out with cardboard the place where the house would stand. Then, with the scale obtained in the photograph from the stakes, we sketched in the blank spot houses of different types, until we found what would fit the background of cedars and pitch pine, and the sloping front of the ground to the street one hundred and twenty-five feet away. Nothing seemed to fit so well as the simple Tudor Gothic type; not an absolutely pure type, because we used the round arches on the porches, but the plain peaked roof carried out the line of the pointed cedars beside and behind it, and the simple planes and long lines gave a sense of solidity and repose.

Saw Brick With a Touch of Warmth.

In the same way we canvassed the different building materials. Cement was too cold; the native stone was unattractive; wood seemed to lack the spirit of strength and endurance. And so we drifted, until we saw a brick with a human touch of warmth, and yet with a feeling of dignity and strength and endurance. There are eleven colors in the series of this brick, and many more colors that intergrade and blend in the texture of each. They are rough-surfaced and hard-burned, and, laid in a Dutch bond with wide, raked-out courses, gave a mellowness and sense of maturity at once; the house seemed to grow from the ground, not to be stuck there. These brick are laid as a facing on hollow tile, which are used as a foundation.

We could not put shingles on the roof—some way they didn't belong; there was nothing that would fit but tile, and we found just the thing in a flat tile of four tones of yellow-green. These four colors were laid at random, and the slightly mottled effect it gives is delightful and harmonizes beautifully with the yellow green of the pitch pines.

There are no shutter abominations; no dormer windows to break the straight expanse of roof, no fancy carvings; and on the south side only a small, peak-roof entrance porch to break the long lines of the front plane. The whole tone of the house is simple and warm and subdued, and we rejoice to see that, like the homes of our bird friends, it fitted its environment—it belonged. To tie it to the ground and break some of the lines that might seem too severe, we have planted at the corners the hardy bittersweet, *Euonymus radicans,* with the smaller variety at the entrance porch. It is a beautiful vine with its thick, shiny leaves and bunches of coral berries in the fall, and on the north end, English ivy. On each side of the entrance porch are Japanese umbrella pines. These are rather formal in shape but fine in color, are slow growers and seem to stand the sun well.

The ground in front was originally an even slope, but we made a terrace for the house, using the cellar dirt. It extends out about twenty-five feet, slopes easily into the grade on either end, and is faced in front with weathered granite boulders. These are laid irregularly, with bays and knobs and points, and with a larger arm at the north end, which swings around and makes the bed for a small pool. This terrace is our joy; we worked hard to have it look like an outcrop of rock that had always been there. The interstices of the rocks are filled with creeping thyme, with low-growing stonecrops and thrift, and other little alpines.

There are vines and plants and bushes brought as living souvenirs of trips to mountains and rivers and wild places. Bearberry vines from the islands of the St. Lawrence, a bush or two of ground juniper, also a little stonecrop, and from the Greenbrier River in West Virginia comes a dwarf iris that is thriving amazingly—its flowers are blue with gold centers. Of course there are saxifrage and veronica and hepatica and columbine from nearby; and from far north, from the Rockies of British Columbia, are some delicate little stonecrops with purple flowers, a plant or two of Alpine phlox, and some dainty cassiopa which we are watching most anxiously. To relieve the flatness are some very dwarf mugho pines and a few taller plants like achillea "the Pearl" and *Sedum spectabile.* At the foot of the terrace is a great bed of peonies with lilies between and flanked by a group of laurel.

Makes a Lawn Pool of Brick.

We have a pool of brick, which is new and not yet fully planted, for we are not trying to finish our grounds in a day. It is too much fun to let the imagination run ahead and picture what will border that pool, what will go into the little bog at its head. Already we have planted a few pitcher plants, cranberries, sundews, and a host of other little things that will grow in its three-feet depth of solid peat, and on the rocky edges *Iris pumila,* Japanese iris, *Iris Sibirica,* and a low very dwarf running form of iris found in the wilds of West Virginia. There are lilies of various kinds, one or two kinds of azalea, some laurel, and, back of these, spireas. The Alpine plants are the best of all. It is strange that they are not planted more frequently.

The entrance to the grounds is up a flight of steps, flanked by huge boulders, and between these rocks grow euphorbias, sedums, *Cerastium tomentosum, Daphne Cneorum, Veronica rupestris, Jasmine nudiflora,* columbines, heath, and hardy ferns, and the ground above is bedded with ground phlox, hardy candytuft, and stonecrops. Along the path on the south side is a clump of wild bushes, with an azalea and rhododendron or two, and on the north side a border of iris and peonies and hardy chrysanthemums and phlox. The roadway enters from the north, and it too is bounded by rocks above which are masses of *Forsythia suspensa* and *Spiraea Van Houttei,* and back of these a wild tangle of viburnum, dogwood, cedar, and taller trees.

We have a full acre of woods, pitch pine and tulip trees mostly, with a sprinkling of other trees, and already we have planted many wild flowers and plants. But enough of this; if you follow around the woods, you'll never get into the house. Suffice it to say we have one-half acre or garden in fine shape now, and had all kinds of fruits started as soon as we could clean the space and long before the house was erected.

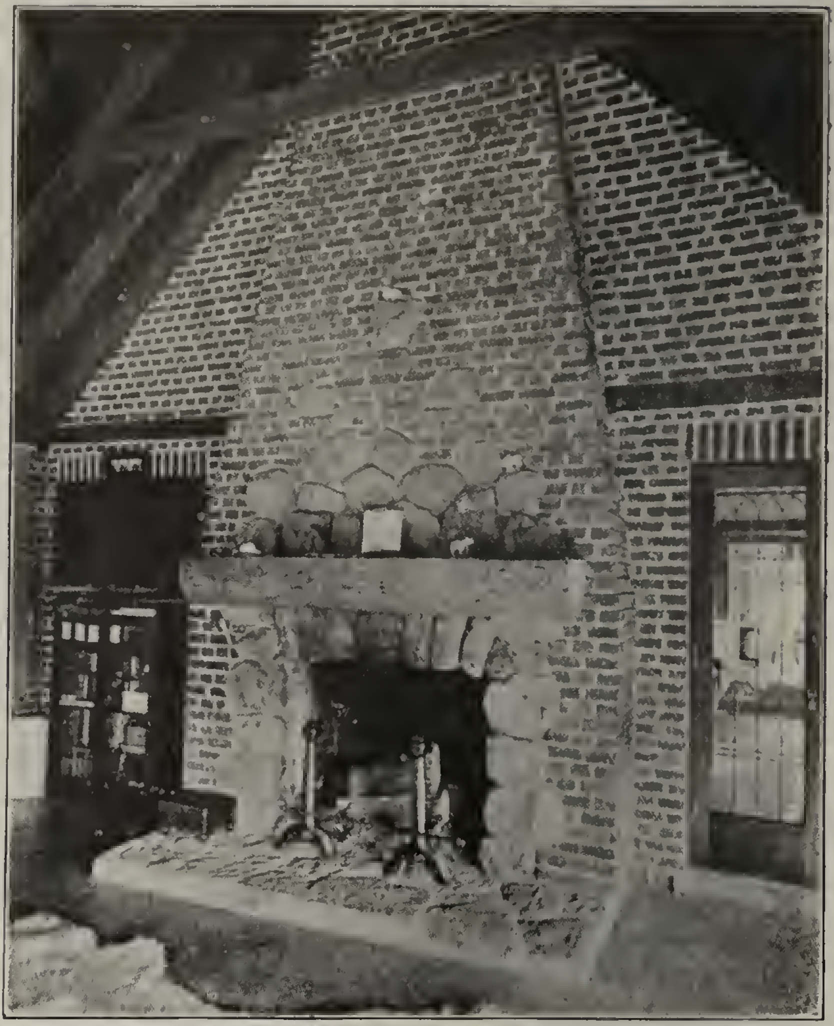
Builds Fire Place in Porch.

A house built for comfort centers around a fireplace. We have three, the best one out on the porch; and, as everyone who comes to visit up heads for that porch, we will go there first. It is 16 by 20 feet, with walls of brick, pierced by large, arched openings on three sides. The roof is carried up to a peak twenty feet high, made of rough-sawed chestnut boards and beams stained dark brown.

The chimney is carried up straight to the mantel and then slants gradually each side and front to the peak of the roof. It is made of brick and field stones, with a quarter-section of a large pin oak tree, with the bark on, for the mantel and the fireplace opening 3½ by 4 feet faced with large field stones. The hearth is raised four inches above the floor, and is of field stones. The whole effect is simple, strong and airy, and the high ceiling in deep shadow makes it a most restful spot. In winter the arched openings are enclosed with glass, so that it is an all-year-round place.

The house opens up its whole length, one room into another through wide entrances, and when we had found a beautiful Gothic mantel of Indiana limestone, for the living-room, it became a great question how to decorate the walls so as to tone down the cold gray of the mantel. We hunted New York pretty well for wall-papers, without success, until we came across the Morris papers, and here found what we were looking for in the design called the "scroll" for the living room. Its soft olive-gray tones warmed by a touch of yellow, and the unobtrusive pattern, were just what was needed to tie the erstwhile too-dominant mantel into the whole scheme. The furniture of the room is old mahogany, and the rugs rather rich Khiva Bokhara, so there is warmth enough, and yet the prevailing tone is restful.

The dining-room is wainscoted and finished in white, with the fireplace facing, and the hearth of a light mottled-green Tennessee marble. We wanted a brighter, snappier paper for this room, and found it in the Morris "Pomegranate," a mixture of gray-blue, olive-green, and touches of maroon. The dining-room furniture is of mahogany of the Sheraton period.

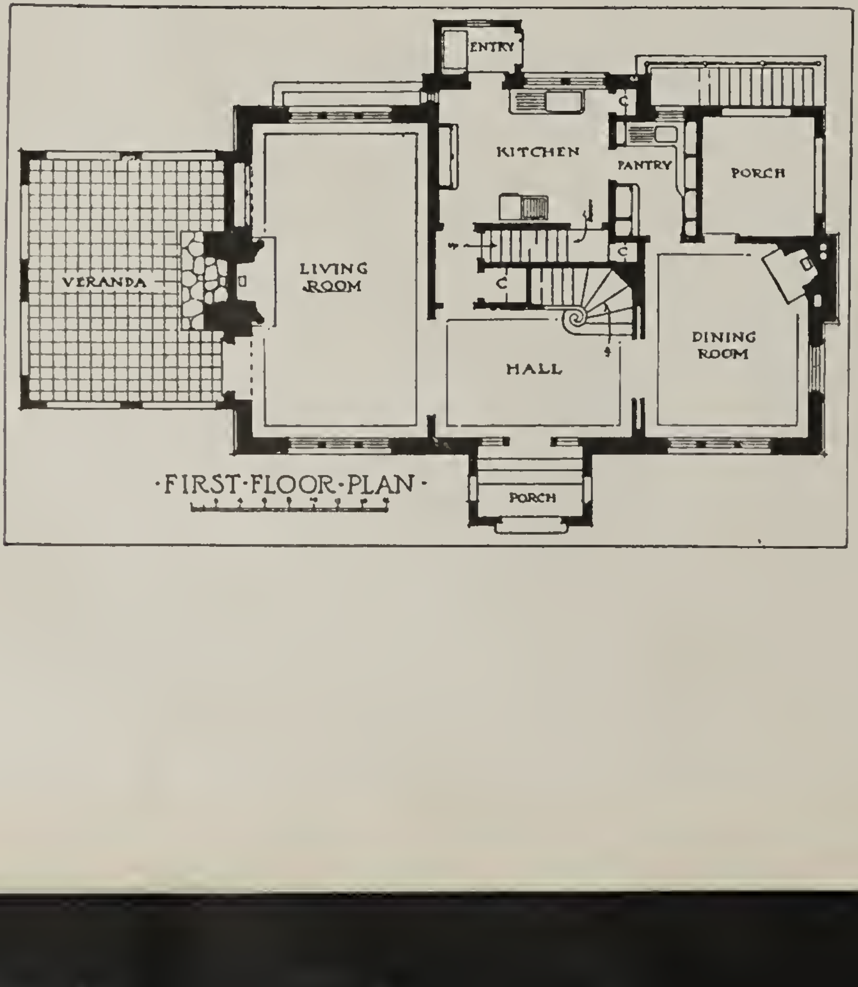


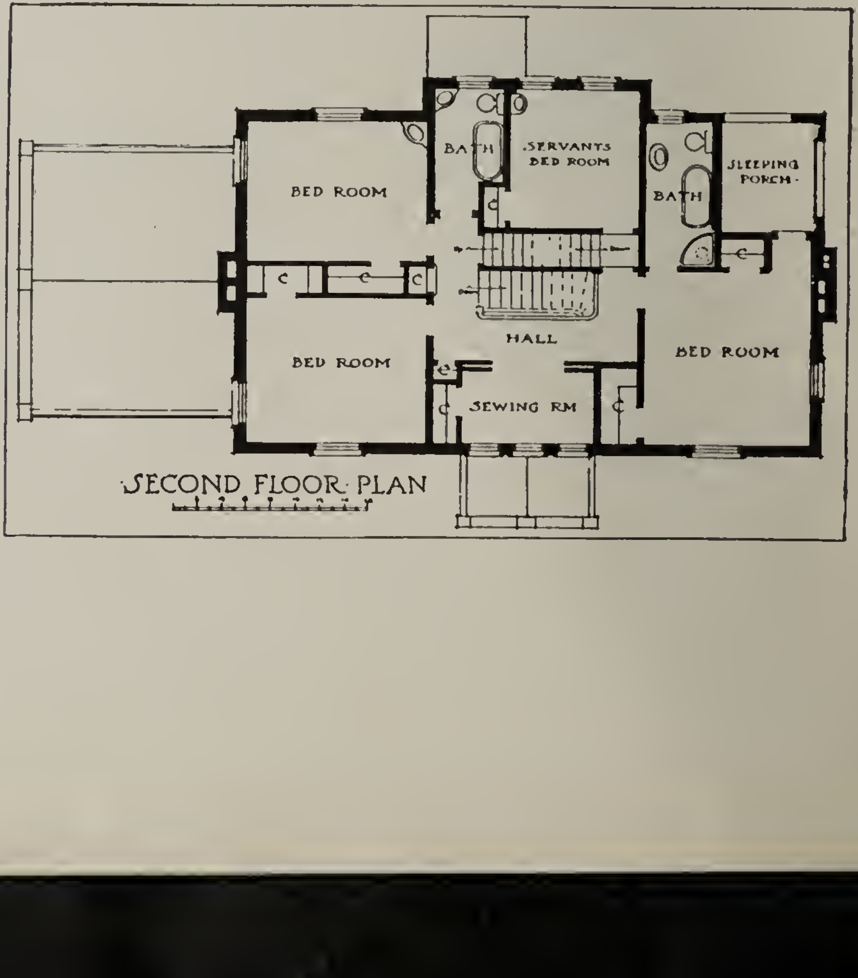
"A House Built for Comfort Centers Around the Fire Place"

The hall paper is of a neutral green tone, that blends the dining-room and living-room together perfectly. From the dining-room a double glass door leads to an out-of-doors breakfast-room, which is enclosed in glass in winter and used as a conservatory for a few semi-hardy plants.

All the rooms are bright and light and cheery, even on the dullest days, from the front on clear days we can see the hills of Staten Island and the high buildings of New York, nearly twenty miles away.

The whole place was constructed not so much with the idea of house but of home—a permanent, beautiful, restful place of refuge—and we had as much pleasure in planning it and working over it as in building it; and now the comfort of it and its beauty grow, and if we had it to do over again we do not know of a single thing we would change.





Fire Losses in Plants

SIMPLE PRECAUTIONS, WHICH, IF TAKEN, WILL REDUCE HIGH RATE OF INSURANCE

By a Staff Writer

FIRE losses on clay working plants are sufficiently heavy to result in a rate considerably higher than the average being charged by the fire insurance companies for the protection which they give. The possibility of reducing the rate on the individual plant is far from remote, because by taking some rather simple and not very expensive precautions the plant can be so thoroughly safeguarded that the hazard, while not eliminated, will be much less in evidence than it has been heretofore.

Not many months ago fire broke out in a large building brick plant in the Ohio valley. The concern had no fire pump, and only a short line of hose connecting with a fire plug in front of its plant. This was attached to the plug, but the water pressure which was secured was found insufficient to enable the stream thrown out to reach the burning buildings. Fortunately, however, the molding sheds and machinery were saved, but other important parts of the plant were destroyed. The loss was heavy and might have been a good deal worse than it was. In fact, there are plenty of brick works where there is so little protection available that when fire breaks out, the owner is forced to stand by powerless and watch it consume the entire plant, with its valuable machinery, stock and sheds.

Clay Plants Usually Are Outside of Fire Limits.

Owing to the fact that most brick yards are located either in the outlying portions of towns and cities, too far away to avail themselves of the fire protection systems to any degree, or else so far in the country as to be entirely cut off from them, the matter of fire protection becomes immediately much more important than in the average manufacturing plant, which can call on the local fire-fighting force and expect to get help with reasonable promptness. The brick manufacturer in most cases must rely upon his own devices to prevent his plant from being destroyed if fire should break out.

This means that it is rank folly to endeavor to get along without making every provision that can be made at a reasonable cost, and that will insure the plant against loss which is almost certain to be incurred by fire, sooner or later otherwise. A comparatively small investment in equipment is immediately profitable, since it cuts down the cost of fire insurance, the companies giving liberal credits for protection of this kind, so that without reference to the possible fire itself the equipment is worth having. Then if the apparatus comes into play in case of a real fire, it will have an opportunity to score a big mark in its favor.

Oftentimes hindsight is better than foresight. The plant of one of the largest fire brick plants in the South was burned several years ago with heavy loss. The business of the company was interfered with just at the time when its trade was in best condition, and took some time after it resumed operations with the reconstruction of its plant to get on its feet, so far as recovering lost business was concerned.

One of the first improvements made in the plant by the president of the company was the installing of equipment to take care of fire if it should break out. The water mains of the municipality near which the plant is located happen to be extended out as far as the plant, and arrangements were made to lay additional pipes into the plant, eight fire plugs being installed, with from 50 to 100 feet of fire hose placed at each one. A fire pump with a capacity of 750 gallons a minute was installed, and was kept in good condition, ready for use, so that if the pressure from the city mains fell off because of use of water at more than one plug, additional pressure could be provided by the special pump.

The equipment has been called into play on a number of occasions to help in extinguishing fires in houses near the plant, and has done such excellent work that the company is fairly certain that it can cope with a blaze which might break out in its own plant. Consequently the members of the concern feel much safer regarding the situation than formerly. They admit that the disastrous blaze taught them a much-needed lesson.

While this firm learned something about the need of fire protection equipment by experience, there are plenty of other brick men, including those who have seen the losses of their confreres in the business, who have never taken the trouble to install safety devices in their own plants. They feel that they are exceptions to the general rule, and that they will just be fortunate enough to escape loss from fire. There is little reason for this feeling, for one who is observing, going over a brick yard, cannot but notice that the fire hazard is a constantly present and menacing factor, which should be considered by the wise business man.

Admits Importance of Protection.

A brick man whose plant is out on a country road, far from the water mains of the city near which he is located, has water enough for his boiler from a nearby stream, which is forced into the boiler by a feed pump installed for the purpose. He has a short line of hose attached to the pump, and in case of fire could throw some water with that. But the supply has to be elevated so far in order to get it into the boiler that there is little or no pressure by the time it is delivered, and the puny stream the pump could throw out would not put out any but the smallest blaze.

This manufacturer is an aggressive, intelligent chap, who has studied manufacturing and selling problems and knows what is what in the industry. He admits that he is taking a long chance in allowing matters to remain as they are in this respect, but for some reason known only to himself he has never acted. He plans ultimately to put in the necessary equipment, but it is just possible that a disastrous fire will visit his plant before he gets time to do so.

The fire hazards in a brick plant are at variance with those usually found, because in the average plant the condition of the boiler room and the power equipment generally is first looked to. In the clayworking industry, of course, the hazard from that source is slight, compared with the danger arising from the manufacturing processes themselves, as indicated in the kilns and in the dry-houses. The use of extreme heat in the production of brick and other products of the clay worker, necessarily introduces an element of great danger, and one which requires vigilance at all times.

For this reason the brick man who wants to make assurance against fire doubly sure, if possible, will not stop with installing equipment to use in case of fire, but will train his men to the handling of it, so that they will be thoroughly familiar with their duties in case a blaze should develop. In many manufacturing plants heavy losses have been suffered because the extinguishers and other devices which had been bought for the very purpose were not resorted to when the fire broke out, either because employes had not been instructed in their use, or because no one knew exactly where they were located.

Familiarity with the equipment is essential, and a few minutes taken just before quitting time or the noon hour semi-occasionally will be sufficient to give the men that ease and agility in handling the lines of hose which is essential to successful work in case of a real emergency. In the same category comes the testing, periodically, of the pumping equipment reserved for use during a fire. It should not merely be examined in a perfunctory sort of way, but should be put to the real test to see whether it is capable of performing the work which its rated capacity indicates.

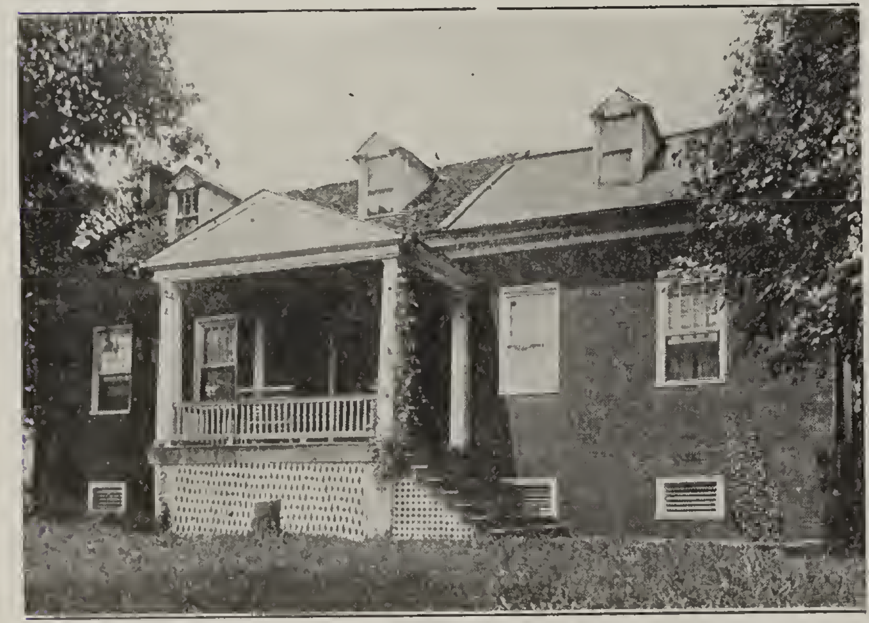
Then, too, a lot of valuable work can be done by the superintendent along the lines of prevention, which is getting to be nearly a synonym for protection. The ounce of prevention is worth a great deal more than the pound of cure here, for it is infinitely easier to keep a fire from getting started than it is to put it out after it has gained headway. Care and constant watchfulness on the part of employes will eliminate many of the dangers that are likely to creep in if the business is carried on carelessly. Then, too, many clay manufacturers, while preaching about fireproof building to others, fail to follow up their own teaching by precept and construct their buildings of flimsy, inflammable materials, and once the flames get started the frame buildings burn in the twinkling of an eye.

The services of a night watchman are, of course, indispensable in a brick plant, and he should be given special instructions regarding putting into use whatever fire equipment there is. The watchman at a brick plant has about the most important job to be found in this line; he is like a soldier on duty in the field, compared with the average sleepy policeman on some suburban beat.

The total fire waste of the country, including the cost of fire protection, is estimated at something like $350,000,000 a year. This is for the United States alone, and is a great deal more, per capita and figured by any other comparison, than losses in other countries. Every industry and every individual, for purely selfish as well as for patriotic and economic reasons, owes it to himself and to society to do all that he possibly can to prevent fire.

Are brick men doing this? If not, it is time to get busy.

Washington House Still Stands



Brick House Built by Geo. Washington in 1790—123 Years Ago.

The house, shown in the accompanying illustration, was built by George Washington in 1790—123 years ago. It is located in Glasgow, Barren County, Ky., although when it was built that section was in Fairfax County, Va. The house is now owned and occupied by A. L. Harris.

At the time the house was built George Washington owned all that land which now comprises Virginia, Tennessee and Kentucky, it having been granted to him by a grateful American Government in consideration for the services rendered during the Revolutionary War.

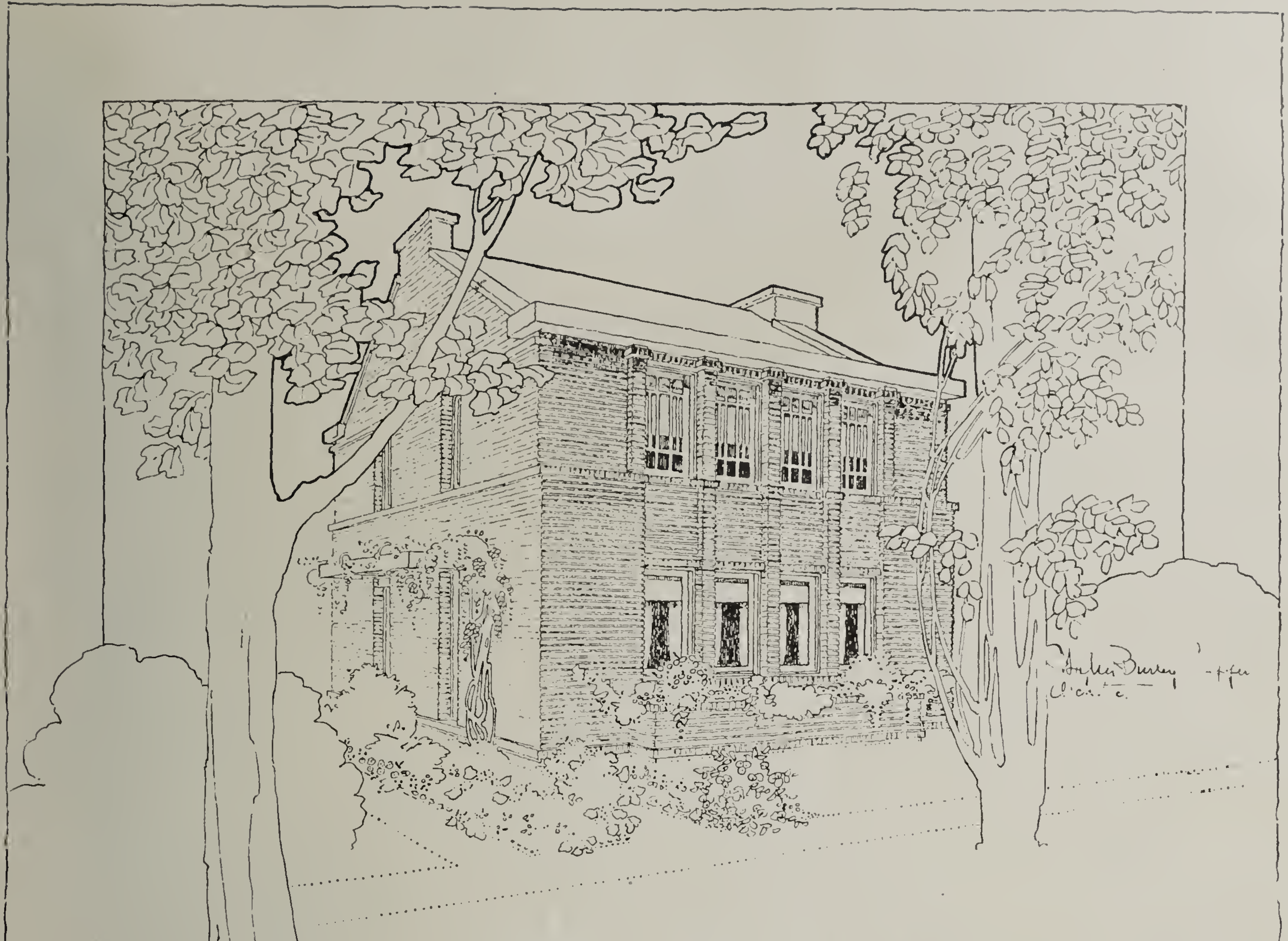
George Washington built this house as a residence for his cousin, General Spotteswoode, who was governor of Virginia at that time. General Spotteswoode was, by nature, of a very retiring disposition and later became a recluse, occupying this house until his death.

The architecture of the house is a wonderful combination of the frontier man's cabin and the city type of dwelling. The walls are solid brick, 36 inches thick. The floors are of hardwood, 2 inches thick, made of chestnut and laid with dowel pins. The original roof was hand-drawn chestnut shingles, one-half inch thick and fastened with wooden pegs. There is not a single nail in the entire building, for nails were not manufactured at the time when the "Father of our Country" built this house.

The windows are of glass that was brought over from France, for glass was not made in this country at that time. The wear and tear to which a building is subjected in the course of the years is here given full proof, for the glass is worn so thin that many of the panes are no thicker than an ordinary piece of tissue paper. Notwithstanding the more than a century's exposure to the elements, the brickwork is in a fair state of repair.

The portion of the roof shown in the accompanying illustration is still covered with the original hand-drawn chestnut shingles. The kitchen has been re-roofed with 800 square feet of J-M asbestos roofing, manufactured by the H. W. Johns-Manville Co., New York.

With the exception of this asbestos roofing on the kitchen and some repairs to the other roof, the house has not been remodeled during its 123 years existence, and only such minor repairs have been undertaken as were absolutely necessary for its preservation.



The 1913 Bungalow

PRIZE HOUSE WON AT 1913 CLAY SHOW WILL COST THE EXPOSITION $2,175

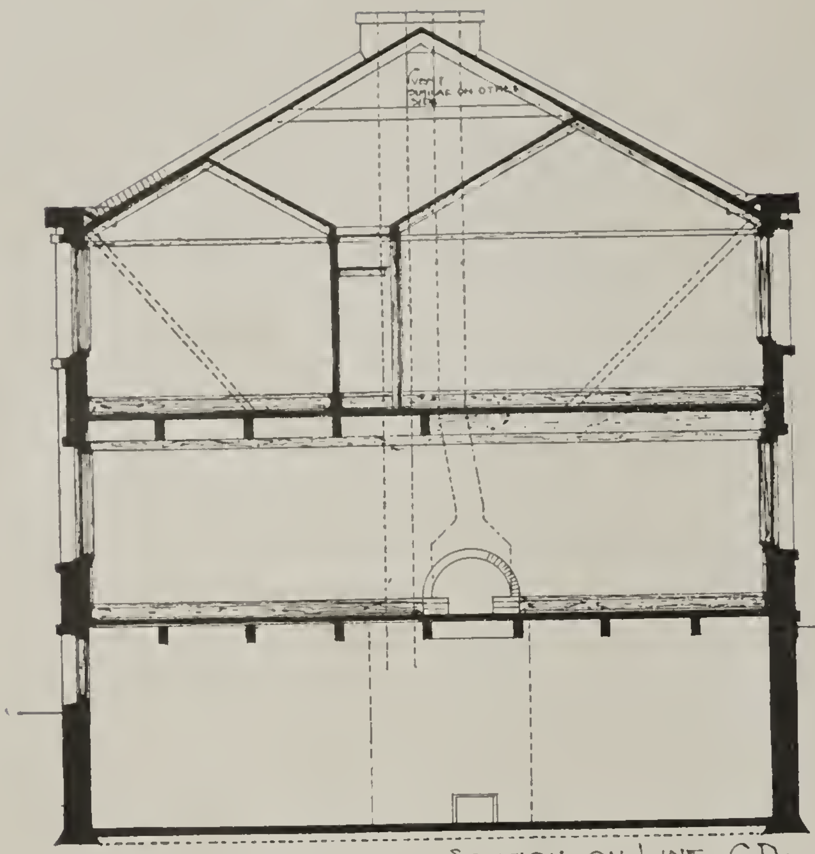
BUILDING prize bungalows in the Coliseum at Chicago, where skilled labor must work night and day, under conditions that make for anything but speed, and where every ounce of building material, excepting water, must be brought to the site, gives but little idea of what the same bungalows can be constructed for, if built under ordinary conditions, in locations where workmen are hired and fired in proportion to their skill and ability to work while working, and where, as a rule, some of the sand taken from the excavation can be used in the rough mortar.

As a consequence, it is of no value to this story to tell what the bungalow cost, at the Coliseum, "Brick & Clay Record" has, however, the figures that are the basis of a contract closed the last week in June, to erect the bungalow designed by Walter Burley Griffin, and which won the 1913 Clay Show prize. This bungalow will be built within the city limits of Chicago, and the contract price is $2,175, which includes everything but the heating, the plumbing fixtures and the gas fixtures. The piping for gas and water are to be placed in position in the walls, and caps screwed on the outlets. This allows the lucky prize winner to select his own kitchen sink, bath-tub and shower, his chandeliers and cozy-corner lights—and pay for them. He also has the greatest freedom of choice in regard to the heating system he prefers and need not install it until he is entirely ready to do so.

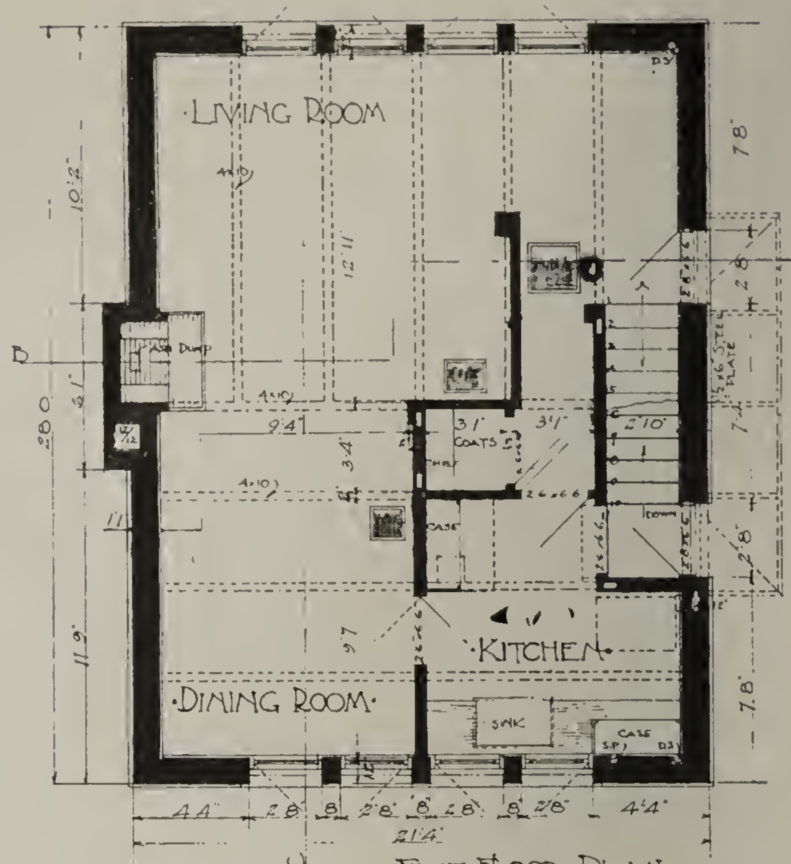
Comparison of the cost of this house, with that of the single house in the Boston Dwelling House Group, plans of which were published in "Brick & Clay Record" June 15, shows that, if this bungalow costs $2,175 without gas or plumbing fixtures or a heating system, it would, were the same fixtures used as in the single Boston house, and the same heating system, cost about $2,500—an allowance of $325.00 being made for these very necessary features of the building's construction.

Due allowance must be made for the fact that this house is to be built in Chicago, where labor and material are both very high. It must also be remembered that the Boston Dwelling House Company built twenty-four houses at one time and this cheapened the cost of each individual house considerably.

"Brick & Clay Record" is indebted to Architect Griffin for the floor plans, elevations and sections shown on the page opposite. Mr. Griffin tells this paper that two houses were built in Chicago from the plans, and that the cost was $2,100 per house, which included the plumbing, but not the fixtures or heating. He estimated that the heating, etc., would cost between $300 and $400, so it is clear that the figures given earlier in this article are substantially correct. It is really a "bungalow" that can be built for $2,500 or less" and as such it is worthy of study.



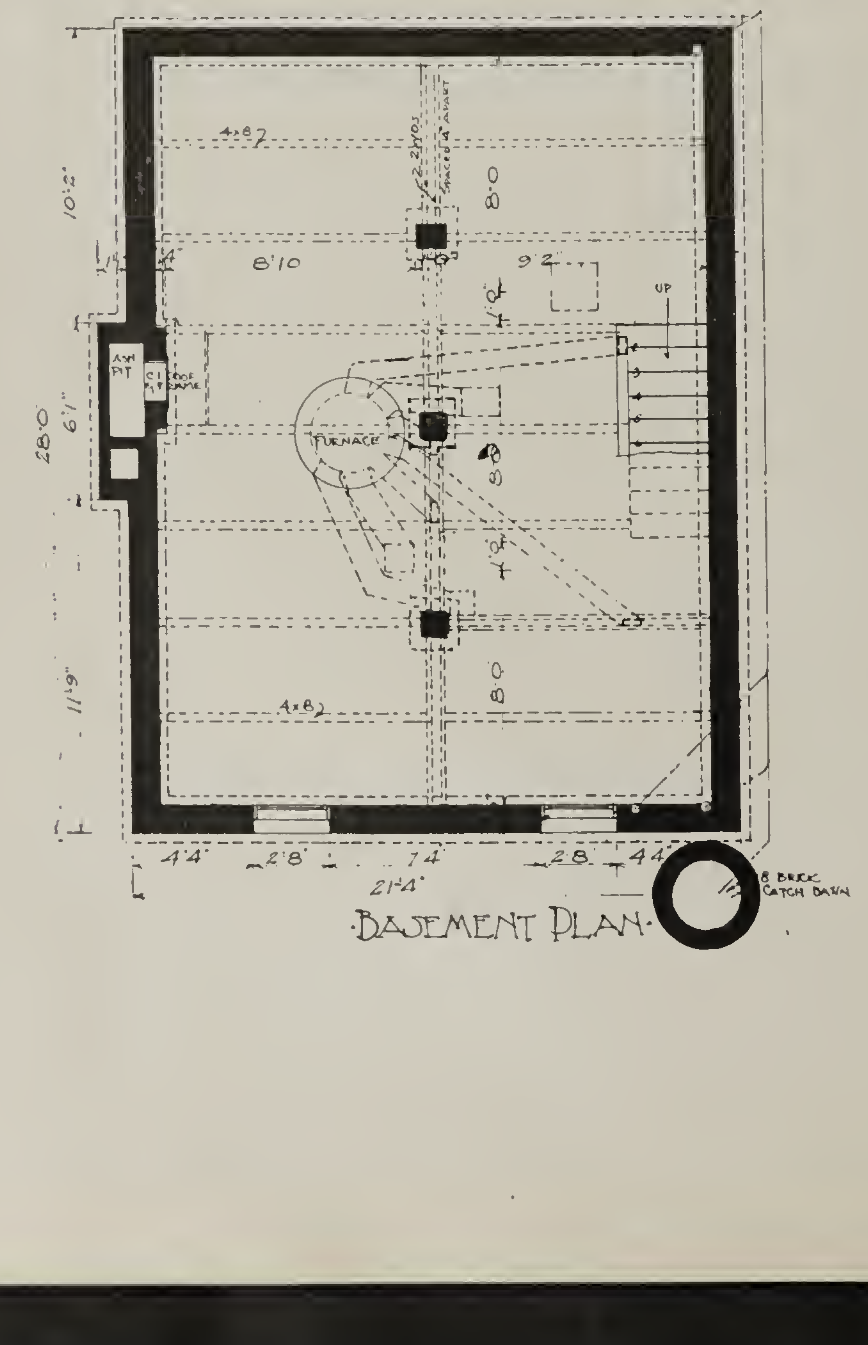
·SECTION ON LINE ·C·D·



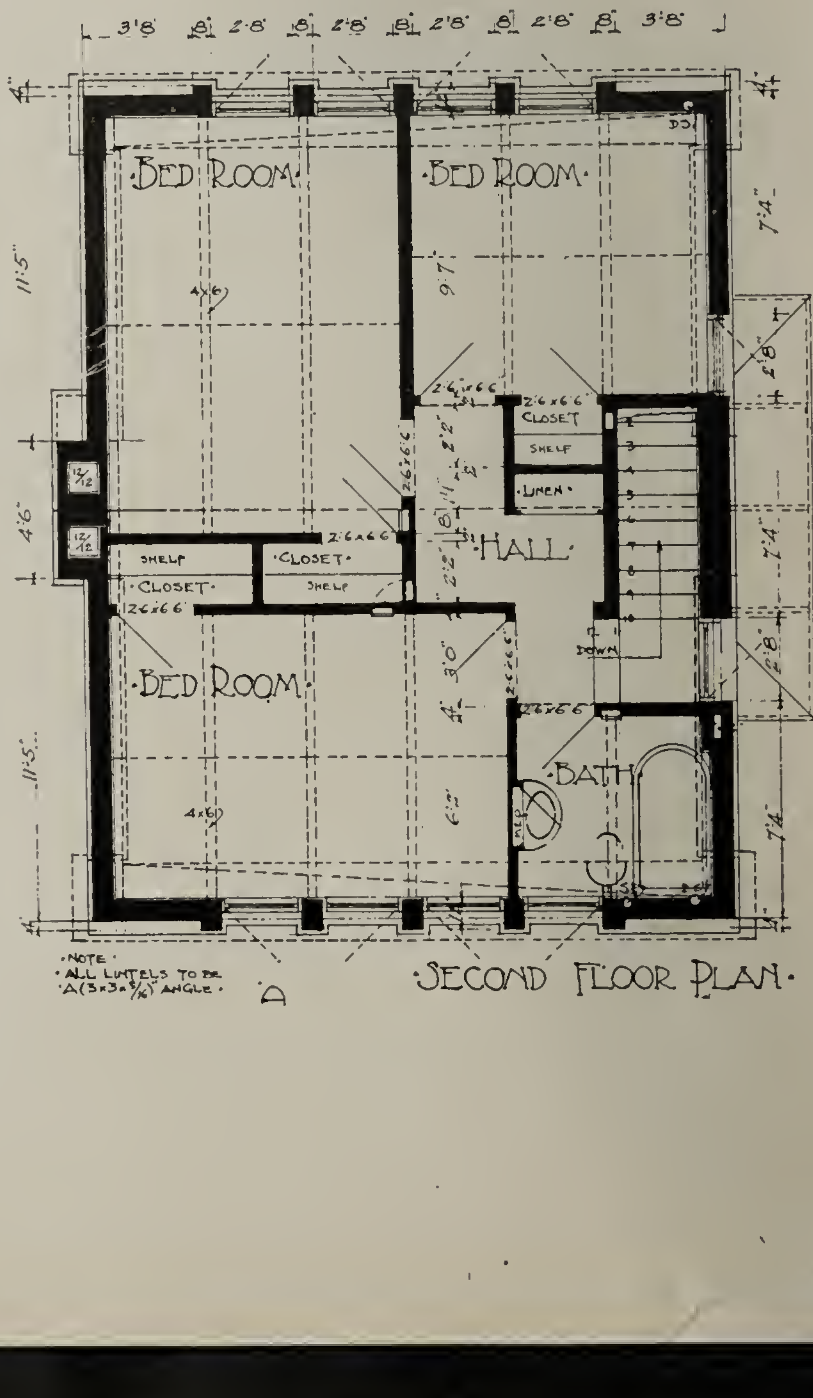
FIRST FLOOR PLAN·

Section and Floor Plans of the 1913 Bungalow

Reproduced Through Courtesy of Walter Burley Griffin, Architect



·BASEMENT PLAN·



·NOTE·
·ALL LINTELS TO BE ·A·(3×3×5/16) ANGLE·

·SECOND FLOOR PLAN·

Selling Brick

SALESMANSHIP AND ITS APPLICATION BY THE MANUFACTURER OF BURNED CLAY PRODUCTS

This is a series of heart-to-heart talks on one of the most important and most neglected departments in the successful conduct of a clay product plant. Mr. Wells also will review current advertising by clay plants, as publicity is one of the essentials of good salesmanship. Manufacturers are invited to submit copies of their advertising for critical review.

Confidence in Yourself

Heart Talk No. 5

By Iverson C. Wells

A SALESMAN who has no confidence in himself is like an automobile without gasoline—he fails to "make a go of it." He may have a product that everyone wants—he may have it in a higher quality and at a lower price than anyone else, but unless he has absolute confidence in his ability to present these facts before a prospective customer, the other fellow, with a poorer quality and a higher price, may step in and make the sale.

The human mind easily lends itself to outside influences, and every time a salesman approaches a customer he is influencing the mind of that customer one way or the other.

Confidence begets confidence.

If you meet a business man and present your proposition to him in a way that impresses him with the belief that you have not absolute faith either in yourself or what you are striving to sell him, immediately he becomes suspicious and it will take an avalanche of labor to sweep away that suspicion.

If a brick salesman enters the office of a prospective builder with a hesitating step, announces his business falteringly and begins to present his argument in such a manner as to show a decided lack of faith in his own premises, he has at the very start made an impression that is unfavorable, to say the least.

If a salesman enters the office with a firm step, announces the purpose of his visit with the air of being proud he is engaged in his work, and fairly breathes confidence, not only in his product but also in himself, he has paved the way for his argument later.

* * *

WE like to see success in other people. We unconsciously turn on the street to look at some man who has passed us because he walks with a firm step, because he looks prosperous, because confidence emanates from every movement of his body.

We strive to cultivate the acquaintance of successful men if we want to be successful ourselves. We shun the man who has been a failure because he has failed.

The buyer, being human like the rest of us, is moved by the same impulses. He prefers doing business with a man who LOOKS like he was successful.

* * *

THE first step in getting confidence in yourself is to make up your mind that selling brick is what you WANT to do and what you INTEND to follow, and not merely a TEMPORARY MAKESHIFT until you can find something that suits you better.

If you determine that this is your forte about half the battle is won.

Some Recent Examples of Local Advertising

conducted by readers of

Brick and Clay Record

A Message To Farmers About Tiling

This message is important—and even though you are crowded with work it will pay you to take the few minutes time to read this.

If you are farming untiled land you are throwing away **every third dollar** of farm profit and we can prove it.

You are putting a dollar in the bank instead of a dollar and a half.

You can find the answer on your farm right this minute. This is the time of year when the need of tiling makes itself most evident.

This spring's heavy rains have ruined crops for many. But the man whose land is drained escapes loss.

Neither Moisture or Drouth Effects His Land. **Surplus** water only is carried off by the tile.

During drouth times tiled lands do not suffer. They are ready to fight drouth. Why? Because the moisture storage basin is multiplied many times by tiling.

The soil is made open, free for the roots to reach stored moisture, free for air, which is essential to plant growth and capillary attraction and loss of moisture by evaporation is done away with.

The sole object of this co-operative Bureau is to teach the farmer how to tile to get the biggest returns from his land. The Bureau has nothing to sell.

We have published a book which tells all about tiling. The book is free. You pay no money now or later. You do not bind yourself in any way, shape or form.

This free book explains how to lay tile and what it will cost you. It tells how tiling means earlier planting and better crop rotation.

It shows how tiling increases the value of every acre you own.

Our book is worth money, but we give it to you free because ours is a missionary organization engaged in teaching our fellow farmers the real facts about tile drainage.

Western Tile Drainage Bureau
100 Main Street Van Meter, Iowa

Send the Coupon and Get This Book Free

Secretary's Office

Western Tile Drainage Bureau, 100 Main St., Van Meter, Iowa

Dear Sir—Kindly send me free of charge and without obligation your Free Book about Tiling and full particulars about Tiling Land for Big Crops.

Name ______________________

Town ____________ *State* ________ *R F D* ___

You will want your children to be proud of your home—you will want it to be a monument to you—your taste and your family's position.

STANDARD BRICK

is the material best suited to build Southern Homes.

The best builders of Real Homes use Standard Brick. The severest tests have proven that Standard Brick meet every requirement of Architects, Builders and owners. For durability and beauty, Standard Brick are recognized as "standard" of the world.

"RATINE" Face Brick **"CHEROKEE RED" Face Brick** **"CRAVENETTE" Face Brick**

BRICK BOOK FREE! This book tells all about brick and gives full information how to get carload rates on small orders. Send for it today.

Standard Brick Co.
MACON, GA,
W. E. DUNWODY, President

Attention of Prospective Builders of Bungalow's

ARE YOU GOING TO BUILD OF BRICK OR HOLLOW TILE CONSTRUCTION—IF SO, TO PROSPSCTIVE CUSTOMERS, I WILL FURNISH YOU A BOOK OF 100 DIFFERENT STYLES OF BUNGALOWS, FREE OF CHARGE. SELECT THE ONE YOU WISH AND I WILL HAVE THE PLANS DRAWN AND FURNISH SAME AT THE LOWEST POSSIBLE COST

I AM IN POSITION TO NEGOTIATE A LOAN FOR YOU.

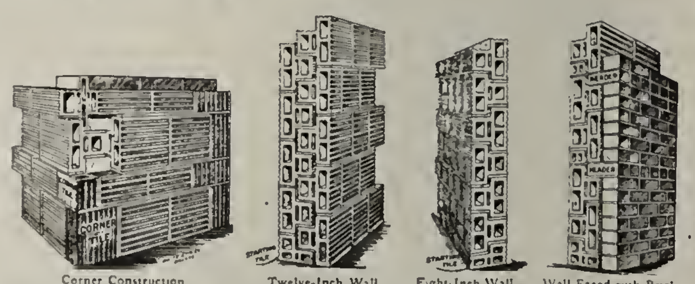
SEE ME, (PARRY OF GARY) THE MAN THAT MADE HOD CARRIERS OUT OF MAIL CARRIERS. DEALER IN ALL KINDS OF BRICK, HOLLOW TILE, MORTAR COLORS, WALL TIES, AND MASON SUPPLIES OF ALL KINDS

CALL AT MY OFFICE AND LET ME SHOW YOU THAT HOLLOW TILE CONSTRUCTION IS AS CHEAP AS FRAME CONSTRUCTION.

W. H. Fyffe Parry

Office Rooms 2, 3 and 4—1000 Broadway, Gary, Ind.—Telephone 215.

DENISON TILE



Corner Construction Twelve-Inch Wall Eight-Inch Wall Wall Faced with Brick

MORE WORK FOR THE BRICKLAYERS-A BETTER WALL AT A LOWER COST

THE BEST BACKING UP, LOAD BEARING MATERIAL EVER OFFEREO. CORRESPONDENCE SOLICITED. FULL INFORMATION GLADLY GIVEN ANY MEMBER OF THE CRAFT

FRASER BRICK CO. —— SOLE MANUFACTURERS —— **GINGER FIRE CLAY PRODUCTS**

Plant—GINGER, TEXAS
OFFICES AND DISPLAY ROOMS, SUMPTER BUILDING DALLAS, TEXAS

BRICK RESIDENCE, SIXTH AVENUE, FORT WORTH.
Approximate Cost $2,000.00.

Has six rooms and bath, front and rear porches, porte-cochere, hardwood floors, three mantels, plastered, 16,000 bricks used in construction

THE ECONOMY OF BRICK

No man builds without counting the cost. Beauty he may wish, but cost comes first with all, excepting a few multi-millionaires who use brick anyhow.

The popular impression that wood makes the cheapest house is an error, as has been shown in these columns.

The first cost does not affect certain principles that must be considered. These, in brief, are: A wooden-walled house can not be prevrnted from rapid deterioration with best care. A wooden house must also be constantly repaired and repainted at great cost.

A lot of this expense for upkeep is eliminated in a brick house. It does not depreciate in value quickly. It grows old gracefully, and in later years will be worth all it cost, possibly more.

In the meantime the safety of your family is assured, you are protected largely from fire, protected greatly from illness, kept warm in winter—cool in summer—for less money every year.

Figure it out. There's a difference—a difference that means dollars and cents to you.

IF YOU CONTEMPLATE BUILDING WRITE FOR LITERATURE.

BRICK MANUFACTURERS' ASSOCIATION

307 Juanita Building. DALLAS, TEXAS

Tile Drainage has put Illinois in the Front Rank as an Agricultural State

Yet there is not one farm in twenty in which a complete tile drainage system has been put in. Some farmers and land owners think that putting in a string of tile through each low place to remove the surplus water is sufficient.

Just try a few strings of tile about four rods apart, over a hill or high place, which is damp and soggy in the spring and see the result. You will get a pleasant surprise. If in doubt, ask us.

CAMPUS BRICK & TILE WORKS
Mamer Bros. Owners
Write for Prices
Campus, Illinois

Next, make yourself familiar with what you are going to sell.

Nothing makes confidence ooze quicker than to discover the man you are TRYING to sell knows MORE about what you are trying to sell than YOU do.

Learn your product. This means more than ascertaining that a brick is so many inches wide and so many inches long. It means that you must go into the plant where the brick is made and learn HOW and WHY it is made.

It means that you will make yourself familiar with every detail of the manufacture, with the delivery and the accounting, so that you will be on SPEAKING terms with these subjects should the occasion occur for you to discuss them with your prospect.

If you are thus equipped you need have no fear as to your ability to hold your own with anyone so long as you stick to your own product, and you can apply yourself to your task with a confidence that is supreme.

* * *

REFERENCE is here made to "sticking to your own product." Some salesmen make a practice of trying to know too much about the product of his rival. The tendency in this case is to "run down" the rival's product. Certainly you would not spend your time "boosting," for you are not trying to sell it—you are trying to sell your own.

If you learn all you should know about your own product it will keep you busy.

The WISE salesmen never discusses the other fellow's product. He lets the rival salesman do that for himself.

If a buyer is disposed to talk about a rival's brick or tile or pipe, tell him you leave that to the other fellow, because he knows more about it than you do.

"I came here to talk about my brick, Mr. Buyer," is your answer. "I did not come to talk about Jones' brick. Jones already has told you all about the good qualities of his ware. Let me show what OURS are—then form your conclusions."

An attitude like this commands respect. It begets confidence. It brings business because we like to do business with a FAIR man—with a man that KNOWS what he is talking about and has so much FAITH in what he is selling he has no NECESSITY to run down the other fellow's goods.

"Every knock is a boost," it has been said. This is true, and it should be true every time. The fact that we feel it necessary to "knock" proves that we believe we have a weak proposition ourselves and are AFRAID of the other fellow's brick because we KNOW of its superiority.

* * *

SOME unusually interesting current advertisements by clayworkers are reproduced in this issue to show what is being done in the way of local publicity campaigns. One of the most significant of these is that of the Western Tile Drainage Bureau at Van Meter, Iowa, because it inaugurates a campaign of statewide importance.

This adv. is the first of a series that is being used in the farm papers that circulate extensively in Iowa. It is a part of the campaign planned by the Iowa Brick and Tile Association, of which H. R. Straight, of Adel, Iowa, is president, and C. B. Platt, of Van Meter, Iowa, is secretary.

The Iowa association is the only state organization that is doing anything serious in the way of publicity and the prosperous condition of the Iowa manufacturers, who also lead all other states in individual publicity methods, attests to the value of creating a demand by letting the people know what you have and by educating them to uses of what you make.

The Western Tile Drainage Bureau, of course, is a department of the state organization, and the inquiries it receives for the pamphlet advertised are sent to the members of the association who are in the territory of the farmer who has shown sufficient interest in tiling to ask for the book.

ANOTHER significant adv. is that of the Brick Manufacturers' Association of Dallas, Texas. The clayworkers of that city have organized into a local association for a selling campaign and are conducting a systematic campaign of publicity to create a local demand.

W. H. Fyffe Parry, of Gary, Ind., who has been a firm believer in publicity for some time and who has originated more than one clever stunt to attract attention and create an interest in his wares, is beginning to break into newspaper advertising, and one of his recent ads. is shown herewith. While the text of his adv. undoubtedly could be improved upon, the essentials are all there, and it would look super-critical for me to offer any suggestions. As it is the purpose of this department, however, to give what aid it can, I cannot refrain from at least pointing out one or two features that weaken the copy.

For instance, would it not have been better had Mr. Parry used this as a display line instead of the one he did employ:

ONE HUNDRED BUNGALOW
DESIGNS FREE

The word "bungalow" would have attracted at first glance those who were interested in bungalows, and the fact that one hundred designs were offered free would have been an additional incentive to make the reader want to see what followed.

After making the statement contained in the heading, a brief description of the book, not forgetting to tell what eminent architects drew the designs, would have been natural.

The Campus Brick & Tile Works adv. is well written, as are the others of the series that have been submitted to this department, but which are reserved for future reproduction, but it is poorly displayed—a fault of the printer

* * *

THE Fraser Brick Co. adv. is taken from a builders' trade journal simply for the purpose of proving what was said in this department recently about advertisers considering any sort of copy good enough for the trade journals, although careful attention is paid to the regular newspaper copy.

The Fraser company has done and is doing some excellent advertising in the Dallas papers, and we have had occasion to reproduce some of this as an example of quality. It is evident, however, that this company believes in following precedent and has been neglectful in preparing its trade paper advertising, because trade paper copy usually is not of a very high standard. Why not use the space in the adv. shown by presenting some ARGUMENTS?

How Cox Got Into the Game

BEING THE STORY OF A YOUNG MAN WHO FELL HEIR TO A RUN-DOWN CLAY PLANT

By Iverson C. Wells

Copyrighted 1913 by the Author

SYNOPSIS OF PRECEDING INSTALLMENTS.

A dilapidated clay plant in Ohio is left Albert Cox, a young insurance solicitor, by his grandfather. Cox visits Mauryville with the idea of selling the plant to some one. Selling is his profession and he argues that any one who learns the principles of salesmanship should be capable of selling anything. He finds, however, that the clay plant has not been run for years and that the clay supply is exhausted. The machinery is antiquated and Sawyer, the old foreman, tells him it is only good for junk. Cox considers cutting up the land into city lots, but the gaping holes in the clay pit soon convince him that his task is hopeless, and he is about to give up in despair when he meets Charlie Simpson, a student at the state school of ceramics, who is home for the summer vacation. Simpson, in exploring the neighboring hills, finds an excellent deposit of clay on one end of the Cox estate. Cox becomes interested in the young man's enthusiastic report and, despite Sawyer's despairing advice, plans to turn the discovery to practical use. He obtains an option on the adjoining property and offers to sell his holdings to Brown Bros., a prosperous firm of clayworkers in a nearby city, which is seeking a new location. The eagerness with which the Brown Bros. take up his offer suggests to Cox that young Simpson was right when he said the clay was of an unusual quality, and getting a sample brick made he slips into Cleveland to consult an architect. It is his intention to verify young Simpson's claims with the idea of establishing a value on the property. To his surprise the architect is very enthusiastic over the brick and offers to take 200,000 on a 60-day delivery. On the impulse Cox agrees to furnish the brick. A visit to other architects gives him tentative orders amounting to 1,000,000 brick. This decides Cox and he determines to go into the brick business. He starts out to rehabilitate the old plant with the assistance of Sawyer and young Simpson. After a visit to the Steinway Brick Machinery Co.'s plant at Pressville, Cox selects his equipment and for two weeks work is pushed night and day in the new plant. The severe strain soon tells on the men and Sawyer and young Simpson finally clash. Cox interests a Chicago dealer in his product and closes a big contract with him whereby he finds it necessary to plan for an enlargement of his plant. He makes arrangements with a machinery house to supply him with additional equipment when he needs it. Late one night Cox discovers his plant on fire and seeing a fleeing figure shoots. It develops that he has shot Sawyer.

DO you believe he is seriously injured?"

I turned to find Young Simpson at my elbow. His face was bloodless and he plainly showed his anxiety.

"I am afraid he is," I replied quietly. At this instance a physician arrived and for several minutes we were busy clearing the room of the curious neighbors and assisting the physician in getting some hot water and bandages.

As I was passing from the room where Sawyer lay unconscious into the kitchen for some pans in which the doctor wanted to sterilize his instruments, I overheard two neighbors discussing the shooting.

"Guess he shot him in the act, all right," one was saying.

"Yes an empty can of gasoline was found not far from where he was picked up," said the other. "Well, he deserved what he got, any man that'd let a grudge lead him into a think like that."

That was as much of the conversation I heard for both men stopped abruptly as they saw me.

Sawyer remained unconscious all that night and the physician shook his head soberly when I asked him as to the condition of the superintendent.

"I can't say just now what the result will be," answered the doctor. "The bullet entered the neck and apparently passed through the throat and lodged there. I do not believe it effected the base of the brain or the spinal chord."

It was late the next day before Sawyer opened his eyes in the first sign of returning consciousness. The next moment, however, he had elapsed into unconsciousness again.

"If he recovers," the physician commented, "I am afraid he will never be able to talk again. The vocal chords have been shattered."

About 8 o'clock that evening, nearly twenty-four hours after the injury to Sawyer, the superintendent opened his eyes again. He was cautioned not to try to talk, and he nodded assent. He looked around the room until his gaze rested on me. There was a brightening of his eyes when he saw me and he made a stir to speak, but the paroxym of pain that followed showed the effort too great.

"Never mind now," I said to him taking his calloused hand. "There is plenty time to talk later."

I felt sorry for the fellow, despite the fact that I knew he had tried to ruin me and I leaned forward and whispered to him that had I known it was him I never would have fired at him. There was a sudden flash of surprise in his eyes and he made another effort to speak but a coughing spell and a slight hemorrhage choked back the words and his head fell among the pillows. I felt a tightening hold on my hand as he closed his eyes wearily.

For several days Sawyer wavered between life and death but the crisis soon came and he passed it safely. An eminent surgeon from Cleveland came at my request and as soon as the superintendent was in a condition to withstand the operation the bullet was probed for and located in the throat. From that day Sawyer began to improve but it was evident that he was to lose the power of speech.

In the meantime the neighbors had been busy gossiping and the story that was circulated most was that Sawyer, jealous of my apparent confidence in young Simpson, had planned not only to cripple me but also Simpson by destroying the plant. Some one even went so far as to declare that he had seen Sawyer prowling about the plant a few minutes before the fire was discovered.

I began a quiet investigation of the various stories afloat and I admit the circumstantial evidence against the superintendent was very strong. I was loathe to believe that Sawyer could be guilty of such an act. He might be surly and quick tempered, but I did not believe he was capable of applying a torch no matter how strong the provocation. Still there were several facts that could not be disputed. At the first discovery of the fire I saw someone running away from the direction of the end of the shed where the blaze was started. I had shot at this fleeing figure and Sawyer was picked up at the spot where the shadowy form was seen to drop.

Then, too, near where Sawyer was found, someone picked up an empty gasoline can. Further investigation revealed the fact that the gasoline can was one that had been in use around the plant. This gave added strength to the suspicion that someone connected with the plant had applied the torch.

I reviewed the incidents of the last few weeks carefully in the hope of finding anyone else that would have had a motive in wishing the plant destroyed, but Sawyer was the only person I could recall who had had any trouble. Still his difference was more with Simpson than me and I could not see what he would gain by closing down the clayworks.

The fire did not interrupt the work at the plant and we were running just the same as if nothing had happened. I placed Young Simpson temporarily in charge of things and, while we missed the experienced help of Sawyer, we were getting along fairly well.

One day Simpson came to me and, first assuring himself that we would not be interrupted, said:

"Mr. Cox, I want to talk to you about Sawyer. I know what the gossip is and I also know that things look pretty dark for Sawyer. I want to say, however, that I never have believed the fellow had anything to do with that fire and that I have been conducting a quiet little investigation of my own."

"How do you reconcile the fact that I saw him running away from the building and that an empty can was found near where he fell when I shot him?" I asked.

"Those two facts do make it look bad, I admit," answered Simpson, "and men have been hung on far less proof. Still, I would ask you to suspend judgment until a little later. I can't tell you just now why I ask this, because what I believe is merely conjecture, but I feel that I can prove Sawyer's innocence if I am given a little time."

I assured the young ceramist that he could have all the time he wanted and he returned to his work. It pleased me to see Simpson manifest a spirit like this.

In the meantime Sawyer gradually was improving and the same morning that Simpson talked to me, was permitted to sit up in his bed propped by pillows. I went into his room and he motioned me to come nearer. Evidently there was something on his mind and he indicated that he wanted a pencil and a tablet. The nurse, however, refused to let him exert that much effort the first day he was permitted to sit up and Sawyer dropped back among the pillows with a resigned look on his face. There was a pathetic gleam in his eye as I assured him he must conserve his strength and that there would be time enough for him to talk.

That evening Simpson came to me again and he could scarcely wait for me to finish some correspondence I was attending to, so impatient was his manner. Finally, when I turned to him, he said:

"Mr. Cox, I told you this morning I was working on a theory that I believed would prove Sawyer not guilty. I've learned something since that encourages me in this theory. You remember the Italian we had here working on the yard helping in clearing up things before the machinery arrived?"

I nodded assent but the fellow only worked a few days and I could not recall having any words with him.

"I fail to see any connection between him and the fire." I replied

"Well," continued Simpson, "there is the man that set fire to the plant."

"What makes you think so?" I asked, leaning forward eagerly.

"I recall that this Italian worked about ten days with us and that Sawyer dismissed him, because he was not needed further. Carvillo—for that was his name, insisted on being kept at work and appealed to you, if you remember. You left the matter with Sawyer."

I recalled the incident but confessed I had forgotten it until mentioned by Simpson.

"Several days later this same Carvillo came to you again," continued Simpson. "You were very busy at that time, as we all were, and you dismissed him rather curtly. Now, I recalled these incidents and looked up the fellow. He has a family of several children and has been out of work for some time. He drinks and for this reason has found it difficult to get steady employment. I figured that he was rather desperate and made a few inquiries about town. I ascertained that on the night of the fire Carvillo was seen in several saloons imbibing pretty freely. He is just the sort of fellow that would nurse an alleged grievance and especially when fired by intoxicants.

"Today at noon I went over to the little shanty where Carvillo lives and inquired for him. I found him in bed nursing some severe burns about the face and a broken arm. I left a little change with his wife to buy some supplies and came away."

"You believe this Italian was the man that set the plant on fire?" I asked. Simpson nodded his head. "How do you account for Sawyer being on the scene and running away?"

"That is something Sawyer will have to explain and I am pretty sure he can just as soon as he is able to," answered Simpson.

I felt considerably relieved at the information given me by Simpson and secretly hoped it was true. Still there was the oil can and there was Sawyer running away from the plant.

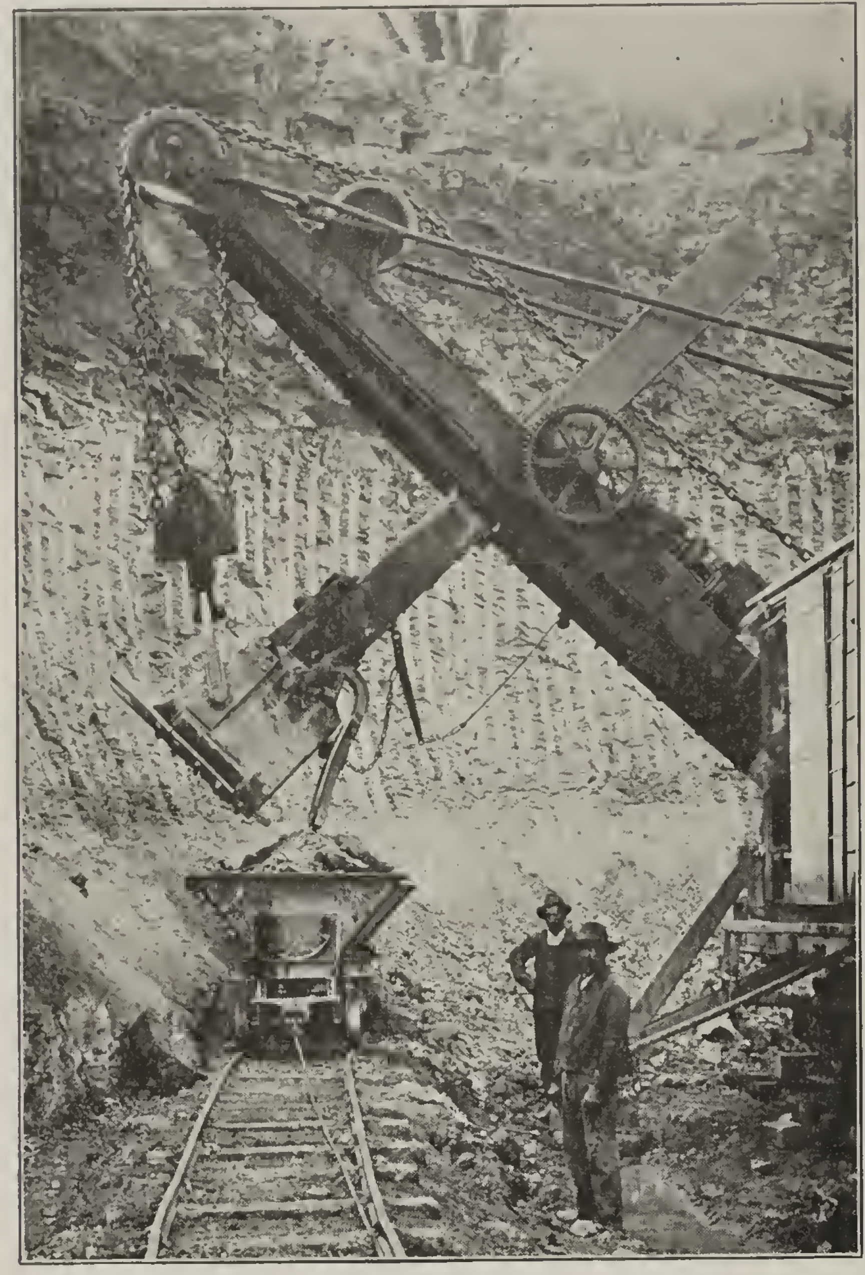
The next few days were busy ones with me. I was mapping out my plans for an extended campaign which I had in mind and there was little time for any thoughts of Sawyer or anyone else.

My experience with Henderson, the Cleveland architect, and with Hobson, the Chicago face brick dealer, and with others with whom I had talked convinced me I had an exceptionally fine brick to offer and I intended to push it for all it was worth.

I recognized the value of a trade name and I also recognized the value of letting the people know you had something to sell. This brick we were making had shown a beautiful golden yellow in the samples we had burned. Simpson had assured me that in the actual burning of a kiln there would be a variety of shades and that these assorted would afford an excellent line.

After some consideration I decided that the word "Goldfield" would supply an excellent name for the smooth face brick which we were turning out in our first burning for Henderson and I proceeded to have it registered as a trade name. I also adopted the name, "Gold-Tex" for the rough face brick which I hoped later to make and "Goldvertex" for a vertical texture which Simpson and myself got the idea from an article that appeared in "Brick and Clay Record." This article told of how the writer by accident had found that by a certain manipulation of a cutting wire that passed over the surface of the clay column would give a vertical texture to the brick at the same time it gave the usual horizontal texture.

Having settled this feature of my plans I turned my attention to getting my product talked about. I knew little about advertising—that is the actual planning and preparation of advertising copy. I knew, of course, the value of publicity and recognized its advantages in helping a salesman to make a sale. I had been in correspondence with an expert publicity man who was de-



Above is shown a view of the new clay pit, recently opened up by the Barber Asphalt Paving Co., Des Moines, Ia. The pit is especially valuable owing to the fact that the overburden is only about two feet thick, whereas the pit, formerly in use, carried an overburden 40 ft. thick. The shale from the new pit makes an unusually fine paving brick, which successfully withstands the tests in the up-to-date specifications calling for No. 1 vitrified pavers.

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voting his time and talents to the clay product industry and he mapped out a consistent and persistent campaign for me. This campaign included everything necessary for publicity from the letter heads and office stationery up to the newspaper ads and pamphlets which I was to use.

This advertising literature covered the field of publicity pretty thoroughly and cost me for the expert's service and the printing a considerable sum, but I felt it was money well invested and subsequent developments proved that I had guessed right.

One morning, after I had completed the details of this work, the nurse informed me that Sawyer was much better and that he had been permitted to sit up several hours each day.

"He expressed a desire to communicate with you, Mr. Cox," she said. "In fact he has wanted to see you for several days but I would not permit him as the physician's orders were not to permit him to overwork himself. I believe it is safe to let him see you this afternoon. Of course, you understand, he cannot use his voice and that he will have to write on a pad."

That afternoon I went in to see Sawyer and found him waiting eagerly for me. He had already written several pages when I arrived and he handed these to me immediately after I had greeted him.

"Sawyer," I said as I took the proffered sheets, "I wish to express by extreme regret at the unfortunate circumstances of that night. Had I known that it was you I would have held my fire."

The old superintendent motioned eagerly for me to read what he had written. Without another word I commenced to read. I had not proceeded far when a new light dawned upon me and I stopped to sieze his hands and express my joy at the turn of events.

With what Simpson had told me and the information conveyed by the few roughly scrawled pages I saw that we had been doing Sawyer a great injustice and that instead of being guilty of trying to destroy my property he had almost lost his life in trying to save it. Briefly outlined here is what Sawyer wrote:

The night of the fire he had retired early but his mind was on the plant and the success of the first burning and he could not sleep. Finally, about midnight, he got up and dressed and walked over to the plant to visit with the burner on watch. As he walked around the corner of the machine room he saw someone fumbling in the shadow of the shed and stepped up to speak to him, believing it was the burner. As he approached there was a blinding flash and a blaze followed. Sawyer saw the fellow stagger away and sprang toward him. It was too dark for him to see who the fellow was as they were on the shadow side of plant. Sawyer seized the man and the two struggled, and in the fight that followed Sawyer's powerful hands gave the arm of his antagonist a wrench and the latter ceased his struggles with a cry of pain. Sawyer unconsciously relaxed his hold and the fellow dropped to the ground. Wheeling about Sawyer kicked away a can of oil that had been placed against the wall of the building and sent it hurling out into the yard.

His antagonist took this opportunity to escape and started to run. Sawyer hesitated, not being certain whether to give chase and captured the fellow or let him go and extinguish the blaze which was just beginning to get under headway. He decided he could catch him and return in time to help the burner whom he believed would see the fire by that time and run to his assistance. "I saw the fellow running across the yard," wrote Sawyer, "and I started after him. He had several yards the start on me, but I felt I could overtake him. I was fast gaining on him when I felt a stinging sensation in my neck and I knew no more."

I almost embraced the old fellow as he sat there in his chair watching me with feverish eyes.

"Sawyer, I am a cad," I told him. "I don't know how I can express my feelings about this matter. I'm awfully sorry for your present predicament for it was my hasty conclusions that is responsible for you being in the position you are today."

Sawyer held up a remonstrating hand. He forgot his condition and struggled to say something. Suddenly he blurted out to my astonishment:

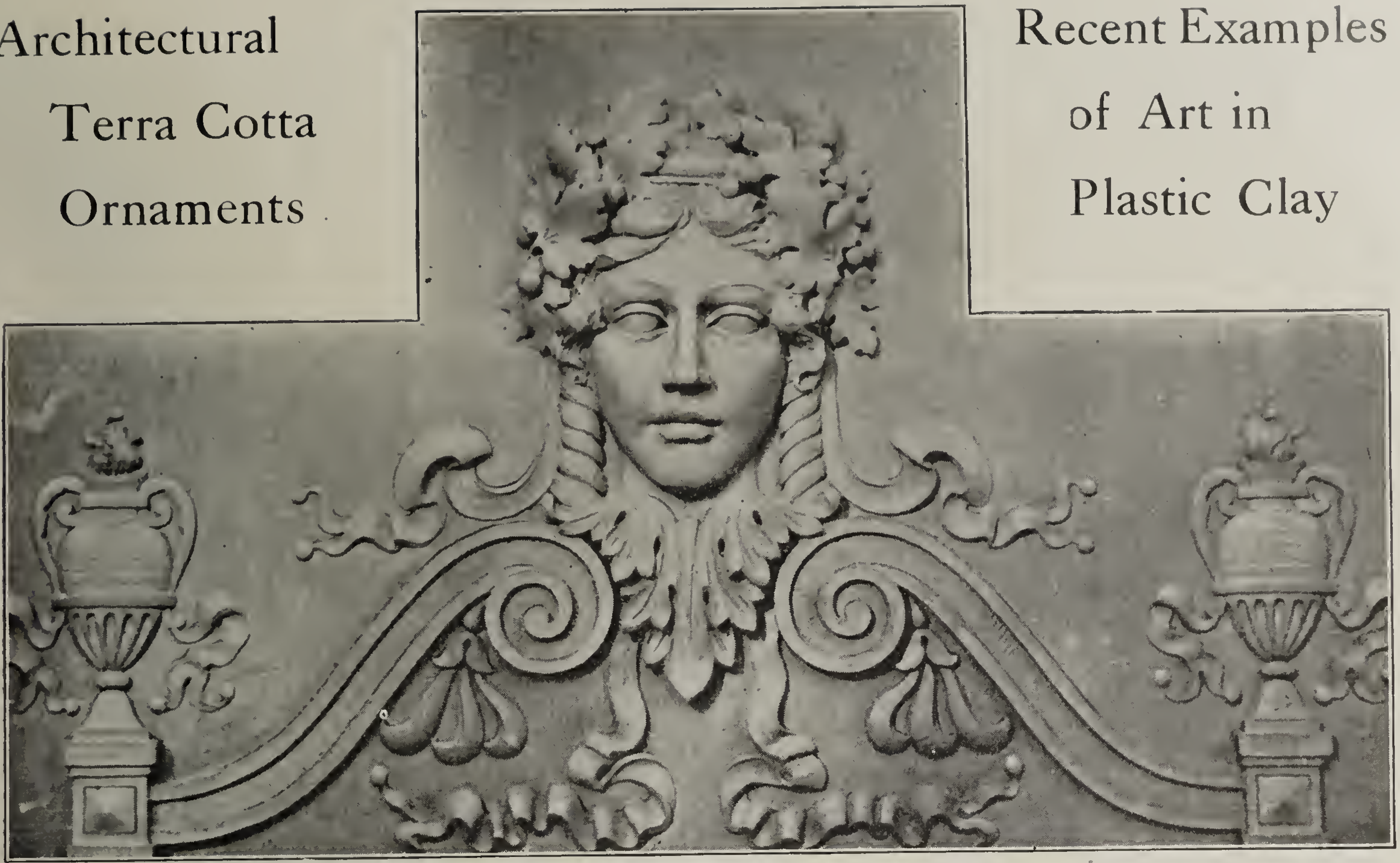
'No. no, my fault! I should have shouted———"

He dropped back clutching at his throat. I cried out for the nurse, cautioning him at the same time not to try to talk any more. We led him back to his bed and I called in the physician, hurridly telling him upon his arrival of Sawyer's sudden restoration of speech, even if it was only for a few words.

(The Continuation of this Story will be found in the July 15 Issue.)

Architectural Terra Cotta Ornaments

Recent Examples of Art in Plastic Clay

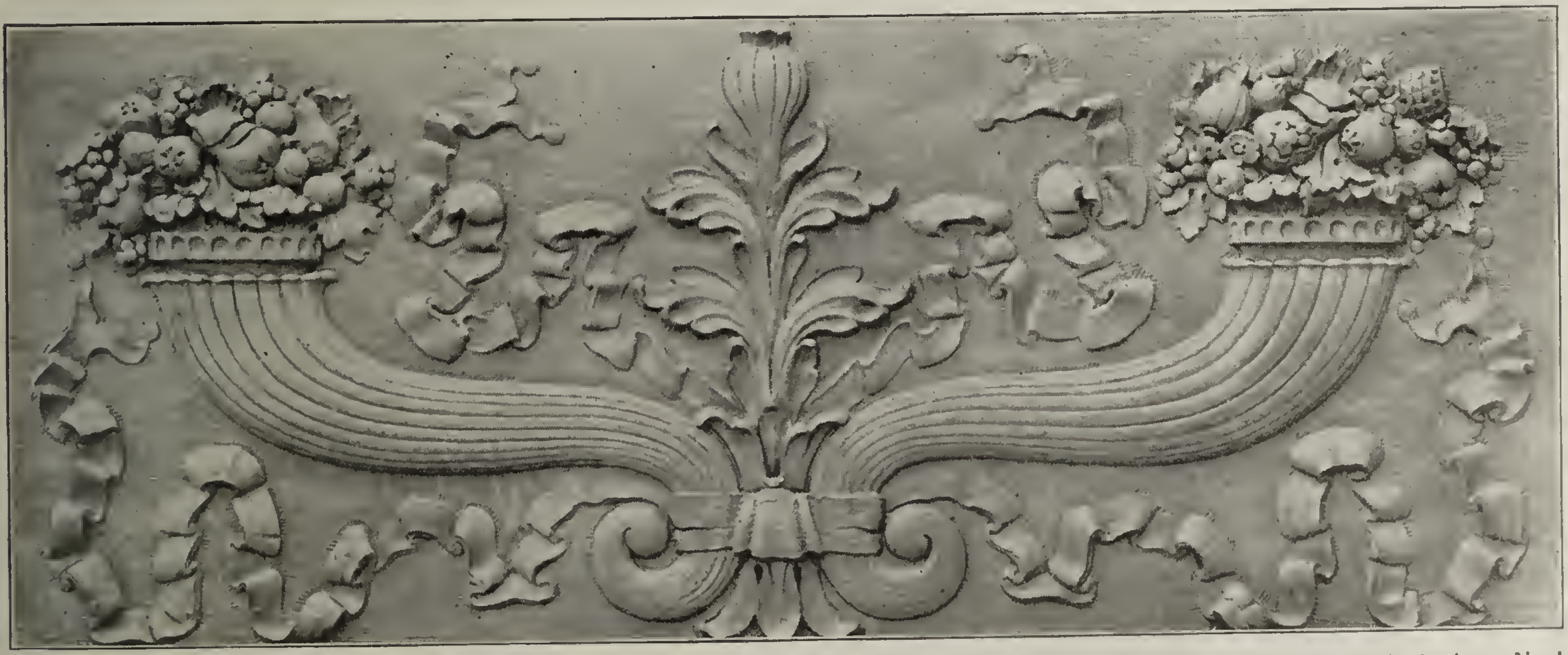


Terra Cotta Detail for the Singer Building, New York City, Made by the New Jersey Terra Cotta Co. at its Plant at Perth Amboy, N. J.

We are indebted to the New Jersey Terra Cotta Company, of Perth Amboy, N. J., for photographs of two of the ornamental terra cotta features of the new Singer Building in New York.

In an advertisement recently published by the New York Architectural Terra Cotta Company, the following statement is made: "Modesty is an excellent trait, but it is easily carried too far. We are proud of our achievements in the manufacture of architectural terra cotta and we frankly admit it. When we entered the field, over a quarter century ago, people laughed at the idea of using terra cotta in any great quantity in large buildings. Today scarcely an important building is erected that does not contain some terra cotta and many buildings use terra cotta exclusively. We do not claim the entire credit for this astounding revolution in the use of building materials. But we have been a most important factor and we are proud of it."

Through an oversight, "Brick and Clay Record" omitted the name of the company that manufactured the terra cotta capitals to the columns that form so striking a feature in the New York State Educational Building, illustrated in the June 15th issue. The Atlantic Terra Cotta Company advise us that not only were these capitals made at their factory, but that the loggia ceiling is executed in cream, ivory and light blue Atlantic Terra Cotta.



Ornamental Terra Cotta Panel Made for the Singer Bldg., New York City, by the New Jersey Terra Cotta Co., Perth Amboy, N. J.

EDITORIAL SECTION

Volume XLIII. CHICAGO, JULY 1, 1913 Number 1

The Making of Prices.

There is considerable talk just now among individual manufacturers of clay products about the price they should charge for their wares. It is no NEW subject. This same proposition has been discussed ever since man moulded clay into shape.

Translations of the clay tablets recently unearthed in the ruins of Ancient Chaldea show that rival clayworkers clashed over the charges they should make.

And that argument dates back nearly four thousand years before Christ.

Price agitation is not confined to the clayworker, either.

There is no industry today but what its members, as individuals, are discussing this same subject.

Unfair competition is undermining the business of the Nation.

Unregulated markets—an unrestrained warfare, these have brought the manufacturer into a critical position.

And the attitude of the Government and the blundering arguments of the **UNTHINKING** newspapers towards industrial evolution has brought about conditions that require the most careful consideration.

We need some sane, level-headed **CONSTRUCTIVE** advocates.

We need some **LEADERS** who will step out from the **RANKS** and **GUIDE** us over the ragged edges of **UNIVERSAL DISTRUST.**

So long as we measure men by the yardstick of the almighty dollar we will have more or less conflict in business, but this conflict may be reduced to the **MINIMUM** instead of being maintained at the **MAXIMUM.**

It is common practice to look upon wealth—created wealth, with suspicion at all times.

The leather-lunged, addle-pated politician of the small community and the large community alike takes advantage of man's common weakness—his aptitude to criticise the **SUCCESSFUL**, and stirs up a **FALSE** sentiment against capital.

This sentiment is reflected in the attitude of the Government because the Government is made up of this same class of professional politicians which makes its bread and butter by keeping up the turmoil.

But wealth, in order that it may **CONTINUE** to be wealth, must produce **SOMETHING NET.**

The more **CREATED** wealth we have, the **MORE LABOR** and the **MORE TRADE** between man and man and nation and nation.

Say what you will—write in jingling words of poetry and rythm—picture the "inroads of capital" in brilliant hues, and stir the mob into a frenzy of passion against the "moneyed interests" but, when you have sifted it all down there remains yet this one truth—created wealth is the asset of the whole people and the measure of prosperity.

There **MUST** be regulation.

There **MUST** be a sane, **COMMON** ground where business may be conducted without resorting to cutthroat methods.

And the clayworker—because he is among the worst of the clan, must take a stand and use his energy and his influence to bring about this condition.

The solution is in a **COMMON** understanding, held in check by **PROPER REGULATION.**

A few years ago the railroads of the Nation were passing through the very same struggle that the clay workers and the other industries of today are facing.

Through unfair competition—through vicious warfare, these public conveyors of the Nation's products, which had been praised by the world for their successful management and their brilliant enterprise, faced financial ruin.

Brainy men put their heads together. The roads reached an **UNDERSTANDING** and the warfare **CEASED.**

From this situation came the government regulation through the interstate commerce law.

And by this action we eliminated the evils of private ownership and unfair competition, and brought about a **REASONABLE** condition that was satisfying both to the people and the railroads themselves, without adopting the objectional government ownership.

If an adjustment of conditions—of rates, of privileges, and a balance of trade relations can bring about these things with the **RAILROADS**, is it not reasonable to suppose that we can do **LIKEWISE** with the clayworker and the automobile man and the sewing machine maker and all the other manufacturers?

Just because a business is **GREAT** does not indicate it is **CRIMINAL.**

Regulated prices, even though they are made by a so-called combination, are to be **DESIRED** when compared with the feverish variations and uncertainties of cut-throat competition.

We have one advantage at least—we know where we stand—we know what to expect.

The solution to the problem should be through the national and local associations of the various industries.

These associations, regulated by the Government, should be permitted to fix a standard of price and **MAINTAIN** it.

This is impossible now, however, because the Sherman anti-trust law, through recent interpretations, makes it criminal.

We cannot—as an organization of manufacturers representing the whole of an industry, settle upon a price at which our product may be resold, if sold through retailers.

There is a way, however, of regulating prices and that is by the "open price" system and it can be brought into use without being declared a moral or legal crime and without an infraction of existing laws.

The "open price" plan has been tried and found not only legal but practical.

So far the test has been made in communities only where a few manufacturers took advantage of its possibilities.

It is possible to extend the plan to **SEVERAL** communities or even to a state or a national association of manufacturers.

The proposition is like this:

Half a dozen manufacturers meet and agree upon a certain dealer or agency man as their agent. A stock company is formed and each manufacturer, including the dealer, takes an equal share in that organization or stock company.

The agent is paid a certain commission to sell their brick or tile or whatever they manufacture.

The first week the sales agency is in operation each manufacturer gives the agent the price at which he **WANTS** to sell his product, there being no collusion as to prices.

The agent, adding freight charges, if there be any, haulage and what other expenses are incurred, together with his commission per thousand, sells accordingly.

At the close of the first week's business or the first month's business, a report is issued by the agent showing the amount of sales, the prices obtained and the name of the manufacturer.

Upon receipt of this weekly or monthly report the manufacturer **KNOWS** at what price his competitor is selling and can adjust **HIS** prices as he sees fit.

It can be seen, then, by the open price method, that each member of the stock company is placed in **FAIR** competition with the other.

There is this one difference between the open price plan and the publication of a retail price list **BEFORE** the sale is made—no prices are published in **ADVANCE** and no **AGREEMENT IS MADE** as to price.

Each member regulates his price in accordance with what **HAS** been established as a profitable price by some other manufacturer and that price may be **LOWER** or **HIGHER** than the one he himself already has determined upon.

The open price plan has its drawbacks but it is about the best that can be had under existing laws and must satisfy until the Government reconstructs the Sherman act so that it will give **CAPITAL** the **SAME PRIVILEGES** it gives **LABOR**, or even the same consideration it has given the railroads.

The manufacturers welcome government regulation of corporations even as the railroads have welcomed it and are perfectly willing that the same protecting influence be extended to them if that influence will end **UNFAIR** competition and give them an opportunity to sell their product on a profit-making basis.

* * *

Illinois Passes Good Roads Bill.

Illinois has lined up for permanent highways. Instead of being a "horrible example" for other states to use as an object lesson, the Prairie State is going to become a **PRACTICAL EXPONENT** of everything desirable in the way of good roads construction.

This change in front took place a few days ago when both branches of the State Legislature by almost a unanimous vote adopted the Trice bill.

The measure may not be a **PERFECT** one in every respect—it may not have all the **BEST** features embodied in the laws of other states, but it means the commonwealth **WILL BE LIFTED FROM THE MIRE** and that is **PROGRESSION.**

The new law codifies and revises the road and bridge laws of the State.

It means that from 18,000 to 20,000 miles of main highways, at least, will receive state aid.

It means that the roads to be improved will be selected by the county boards with the consent of the state highway commission which is composed of three members.

The new law means that **WHATEVER APPROPRIATION** is made by the **COUNTIES**, will be duplicated by the **STATE.**

It means that **AFTER** the improvement is made the State will assume the responsibility and pay for the **PERPETUAL** maintenance of these roads.

Another feature about the new law, which is satisfying to those who are really sincere advocates for permanent highways, is the provision that requires that all roads so improved shall **CONNECT WITH IMPROVED ROADS** in an adjoining county.

This assures **CONTINUOUS** good highways throughout the State—a **CONNECTING LINK** with good roads in other states and a positive tie with the proposed Coast-to-Coast highway.

The allotment of moneys by the State was one of the contentions of those opposing the measure in its early stages before the Legislature.

The law provides this money will be alloted in proportion to the amounts they pay in taxes towards the total road and bridge fund of the State, with the single exception that Cook county—Chicago, is to receive twenty-five per cent of the amount it contributes to the State aid fund.

Because of companion measures passed by the same Legislature, Illinois will have nearly $3,000,000 available for road work during the next two years.

These measures are those that appropriate $800,000 from the automobile fund and $600,000 from the general fund, or a total of $1,400,000.

Inasmuch as this sum must be duplicated by the counties there will be at least $2,800,000 in the good roads fund—a considerable sum for a first-step proposition.

With Illinois taking a **DEFINITE** stand as it has on this subject of permanent highways it now behooves the paving brick manufacturers, through their national organization, to see that **EVERY** inch of highway construction is **TRULY PERMANENT** in accordance with the spirit of the new law.

This means that vitrified brick must band the State from end to end and the way to accomplish this is to **ACT** and act **NOW**.

It is a safe bet that the cement interests already have their wires located and are pulling with every ounce of their energy.

It is safe to assume that the macadam fellows are laying their plans to rake in the shekels.

These, however, do not represent **PERMANENT** highway construction and the vitrified brick interests have **EVERYTHING** in their favor if they but step forward and **PRESENT** their claims.

* * *

Profiting By Habit.

The manufacturer who recognizes **HABIT** in his search for the greatest efficiency among his employes comes nearer reaching his goal than the manufacturer who believes in training his men to be "Jack-at-all-trades."

The **SKILL** of any workman is due to the fact that he has applied himself **CONTINUOUSLY** to whatever specific work he may be engaged in.

The man who has, from early childhood, used his **RIGHT** hand more than he has his **LEFT**, **NATURALLY** can use that member to **BETTER** advantage than the other.

Applying the same rule the workman who has used the **SAME** work bench or vise or lathe day in and day out will give you **BETTER** service than he would if he is **CHANGED** to another section of the shop and to another bench or vise or lathe, even if those tools are of the same manufacture and to all purposes identical.

There is a **MISUSE OF ENERGY** when specialization is not enforced.

If you have a workman who is doing well—who is giving you a fair efficiency out of his employment, let him continue on that work. Do not change him from one employment to another with the idea that "a new broom sweeps cleaner."

If you have a man who has been working the pug mill to your **SATISFACTION**, keep him there. He has, through continuous application to his duties, equipped himself for that particular machine and it would be manifestly unfair to both you and him to change him to the dry pans just because the man in charge of that work is not up to your standard.

This is a day of **SPECIALIZATION**. Even the day-laborer who handles the spade in the pit gives better service if permitted to continue to handle the spade.

He may be able to drive a mule car, but the man who has **SPECIALIZED** on the mule car will do better than he will because driving the car has become a **FIXED HABIT** with him and he performs much of his work **UNCONSCIOUS OF THE EFFORT** and mechanically, while the other fellow will have to stop to figure out ways and methods.

First find out what work a man does **BEST**, then keep him at it.

CONGENIAL labor is necessary to **EFFICIENCY**.

Just as well try to force an auger machine to make dry pressed brick as to make a man who is best adapted to run the pug mill take charge of the crusher or dry pan.

Man's life is made up a series of "habits." The world exists through "habit." Whatever we do **BEST** is because we are more accustomed to doing that one thing.

* * *

It takes one drop of water a long time to make an impression. A multiple of drops make the mighty Niagara and furnish power enough to run the wheels of the Nation. One clayworker, standing alone, eventually may convince the world that imperishable clay is the ideal material, but 10,000 banded together in one great body of active workers, with a common cause as its object, can accomplish the same thing at will.

New Methods and Processes

A DEPARTMENT OF TECHNOLOGY
WHEREIN RECENT EXPERIMENTS
AND DISCOVERIES ARE EXPLOITED

Edited by

Charles S. Kinnison

Ceramic Chemist, United States Bureau of Standards, Department of Ceramics

Contributing Editors : Prof. Charles F. Binns, Ellis Lovejoy, C. E., Anton Vogt

The Testing of Paper Clays

Few ceramists realize what a large amount of white clay is used for filler in the manufacture of paper and other articles not connected with the ceramic industry.

In a paper read before the American Ceramic Society (Trans. A. C. S. Vol. XIV. p. 571-74) Chas. E. Gwinn describes some physical tests to determine a clay's suitability for paper-making purposes. The tests described are intended to apply primarily to the use of clay as a filler, since this is by far its most important use in the paper industry. The physical characteristics considered are (1) presence or absence of grit; (2) color; (3) capability of disintegration; (4) retention.

GRITTINESS. Clays to be used in paper making should be as free from grit as possible, since the presence of such proves very detrimental in many ways. It not only leads to increased wear on the paper machines, but is also apt to cause breaks in the finished sheet during the process of manufacture.

A rough way of determining the presence of grit in a clay, and one commonly used by paper makers, is to take some of the clay and "feel" for the grit between the teeth.

A more definite method for determining the amount of grit, is to weigh up, say, 200 grs. of the clay under examination and add to it in a baker or other suitable vessel, 800 to 1,000 c. c. of water. Agitate with a mechanical stirrer until all the clay has been mixed with the water and well brought into suspension. This operation will probably require an hour or longer. The mixture is then screened through a 200-mesh silk bolting-cloth screen. The grit remaining on the screen is now collected, dried and weighed for examination.

The amount of grit permissible in a clay to be used for paper making purposes depends upon the type of paper in which it is to be used. For an ordinary high-grade newspaper, 2 per cent would in general be objectionable, more particularly on account of the fact that news machines are run at high speed and the presence of every added amount of grit means increased wear on the machine. The character of the grit would also be of influence in deciding this point, a sandy or silicious grit being much more objectionable than a micaceous one.

COLOR. The color of a paper clay is of importance as affecting the color of the paper even though it may be to a small degree. In determining the color of a clay, it is customary to compare the clay with others used as standards. These standards are chosen arbitrarily and may grade from the purest possible white to a dingy gray or yellow.

In conducting a test, a small amount of the clay in question is mixed with water to the consistency of a paste and made into a smooth pat on a glass plate. The standard evidently nearest to it in color is similarly treated and made up into a pat immediately alongside the first. The surfaces of the two are smoothed off until they become continuous. By this means any difference in color is clearly brought out. The test pats are examined while they are still moist and also after they have dried out. The conclusion, however, is usually drawn from the examination made on the dried surfaces, since it is considered that this condition is more representative of that under which the clay will exist in the paper, and that it shows at the least, how the color of the clay may be affected by the wetting and subsequent drying.

DISINTEGRATION. The property of rapidly disintegrating is to be desired in a paper clay. A simple test for this is to put a lump of clay in a beaker of water and note the rapidity of the disintegration. Other things being equal, a clay which falls to pieces rapidly in water, would be more desirous than one which took some time to disintegrate.

RETENTION. Another thing to be taken into consideration regarding a paper clay, but one which is not judged by a laboratory test, is what is known as its "retention." For example, if of the clay furnished, 80 per cent is found by analysis to be present in the finished paper, then the clay is said to have shown a retention of 80 per cent. This property depends not only on the inherent qualities of the clay, but it is also largely influenced by the kind of fiber used, the length of time of beating and the amount of clay furnished.

The amount of retention of a clay can be determined in the mill during the every day process of manufacture. An account is kept of the amount of clay furnished to the beakers, and of the amount of the paper production. Samples of the paper are taken at regular intervals and the ash content determined, and from this the per cent of the original clay in the paper, taking into account the moisture in the clay and the ash of the wood, is made known. Knowing the total paper production, the total amount of clay retained can be calculated and from this, with the amount of clay furnished, the "retention" can be computed.

One-Burn Terra Cotta Engobe and Glaze

While the glazing of terra cotta in a one-fire operation has caused many troubles, and in the majority of factories the two-fire process is used, it is quite possible to make one-burn terra cotta if all conditions are favorable to the glaze on the green body, says the "British Clayworker." The clay should have about one-half very plastic clay and the other half can be some sandy clays. The engobe should always be of a very plastic nature, as this will stick better than non-plastic engobes. A good engobe for this purpose can be mixed as follows:

Norwegian feldspar	4 parts
Meiser white engobe clay	12 parts
Saazar white engobe clay	12 parts
Washed Zettlitz kaolin	3 parts

The feldspar and the engobe clay are ground for fifteen hours and the kaolin is added afterwards. It is advisable to let this engobe stand for three or four days before using, in order to get all air removed from the slip. A good glaze which will fit this engobe is made as follows:

White lead	34 parts
Hohenbocka Flint	10 parts
Norwegian feldspar	6 parts
Zettlitz kaolin	2 parts

The different ingredients are ground together and the glaze is passed through a fine screen before using.

Publications on Fuel and Its Consumption

Numerous inquiries have been received by "Brick and Clay Record" regarding methods of using various grades and kinds of fuel in different branches of clayworking and believing it will prove of interest and value to the trade, we have compiled a list of the publications issued by the Bureau of Mines which treat of this important subject. Any or all of these bulletins will be sent free to parties applying for them. Requests should be made to the Director, Bureau of Mines, Washington, D. C. The complete list is as follows:

Bulletin 1. The volatile matter of coal, by H. C. Porter and F. K. Ovitz, 1910, 56 pp., 1 pl.

Bulletin 2. North Dakota lignite as a fuel for power-plant boilers, by D. T. Randall and Henry Kreisinger, 1910. 42 pp., 1 pl.

Bulletin 4. Features of producer-gas power-plant development in Europe, by R. H. Fernald. 1910. 27 pp., 4 pls.

Bulletin 5. Washing and coking tests of coal at Denver, Colo., July 1, 1908, to June 30, 1909, by A. W. Belden, G. R. Delamater, J. W. Groves, and K. M. Way. 1910. 62 pp.

Bulletin 6. Coals available for the manufacture of illuminating gas, by A. H. White and Perry Barker, compiled and revised by H. M. Wilson, 1911. 77 pp., 4 pls.

Bulletin 7. Essential factors in the formation of producer gas, by J. K. Clement, L. H. Adams, and C. N. Haskins. 1911. 58 pp., 1 pl.

Bulletin 8. The flow of heat through furnace walls, by W. T. Ray and Henry Kreisinger. 1911. 32 pp.

Bulletin 12. Apparatus and methods for the sampling and analysis of furnace gases, by J. C. W. Frazer and E. J. Hoffman. 1911. 22 pp.

Bulletin 13. Résumé of producer-gas investigations, October 1, 1904, to June 30, 1910, by R. H. Fernald and C. D. Smith. 1911. 393 pp., 12 pls.

Bulletin 14. Briquetting tests of lignite, at Pittsburgh, Pa., 1908-9; with a chapter on sulphite-pitch binder, by C. L. Wright. 1911. 64 pp., 11 pls.

Bulletin 16. The uses of peat for fuel and other purposes, by C. A. Davis. 1911. 214 pp., 1 pl.

Bulletin 18. The transmission of heat into steam boilers, by Henry Kreisinger and W. T. Ray. 1912. 180 pp.

Bulletin 19. Physical and chemical properties of the petroleums of the San Joaquin Valley, Cal., by I. C. Allen and W. A. Jacobs, with a chapter on analyses of natural gas from the southern California oil fields, by G. A. Burrell. 1911. 60 pp., 2 pls.

Bulletin 21. The significance of drafts in steam-boiler practice, by W. T. Ray and Henry Kreisinger. 64 pp. Reprint of United States Geological Survey Bulletin 367.

Bulletin 23. Steaming tests of coals and related investigations, September 1, 1904, to December 31, 1908, by L. P. Breckenridge, Henry Kreisinger, and W. T. Ray. 1912. 380 pp., 2 pls.

Bulletin 24. Binders for coal briquets, by J. E. Mills. 56 pp. Reprint of United States Geological Survey Bulletin 343.

Bulletin 27. Tests of coal and briquets as fuel for house-heating boilers, by D. T. Randall. 44 pp., 3 pls. Reprint of United States Geological Survey Bulletin 366.

Bulletin 28. Experimental work conducted in the chemical laboratory of the United States fuel-testing plant at St. Louis, Mo., January 1, 1905, to July 31, 1906, by N. W. Lord. 51 pp. Reprint of United States Geological Survey Bulletin 323.

Bulletin 29. The effect of oxygen in coal, by David White. 80 pp., 3 pls. Reprint of United States Geological Survey Bulletin 382.

Bulletin 30. Briquetting tests at the United States fuel-testing plant at Norfolk, Va., 1907-8, by C. L. Wright. 41 pp., 9 pls. Reprint of United States Geological Survey Bulletin 385.

Bulletin 31. Incidental problems in gas-producer tests, by R. H. Fernald, C. D. Smith, J. K. Clement, and H. A. Grine. 29 pp. Reprint of United States Geological Survey Bulletin 393.

Bulletin 32. Commercial deductions from comparisons of gasoline and alcohol tests on internal-combustion engines, by R. M. Strong. 38 pp. Reprint of United States Geological Survey Bulletin 392.

Bulletin 33. Comparative tests of run-of-mine and briquetted coal on the torpedo boat Biddle, by W. T. Ray and Henry Kreisinger. 50 pp. Reprint of United States Geological Survey Bulletin 403.

Bulletin 34. Tests of run-of-mine and briquetted coal in a locomotive boiler, by W. T. Ray and Henry Kreisinger. 33 pp. Reprint of United States Geological Survey Bulletin 412.

Bulletin 35. The utilization of fuel in locomotive practice, by W. F. M. Goss. 29 pp. Reprint of United States Geological Survey Bulletin 402.

Bulletin 36. Alaskan coal problems, by W. L. Fisher. 1911. 32 pp., 1 pl.

Bulletin 37. Comparative tests of run-of-mine and briquetted coal on locomotives, including torpedo-boat tests, and some foreign specifications for briquetted fuel, by W. F. M. Goss. 58 pp., 4 pls. Reprint of United States Geological Survey Bulletin 363.

Bulletin 39. The smoke problem at boiler plants, a preliminary report, by D. T. Randall. 31 pp. Reprint of United States Geological Survey Bulletin 334, revised by S. B. Flagg.

Bulletin 40. The smokeless combustion of coal in boiler furnaces, with a chapter on central heating plants, by D. T. Randall and H. W. Weeks. 188 pp. Reprint of United States Geological Survey Bulletin 373, revised by Henry Kreisinger.

Bulletin 43. Comparative fuel values of gasoline and denatured alcohol in internal-combustion engines, by R. M. Strong and Lauson Stone. 1912. 243 pp., 3 pls.

Bulletin 65. Sampling coal deliveries, with notes on types of Government specifications for the purchase of coal, by G. S. Pope. 1913. 68 pp., 4 pls.

Technical Paper 3. Specifications for the purchase of fuel oil for the government, with directions for sampling oil and natural gas, by I. C. Allen. 1911. 13 pp.

Technical Paper 5. The constituents of coal soluble in phenol, by J. C. W. Frazer and E. J. Hoffman. 1912. 20 pp., 1 pl.

Technical Paper 8. Methods of analyzing coal and coke, by F. M. Stanton and A. C. Fieldner. 1912. 21 pp.

Technical Paper 9. The status of the gas producer and of the internal-combustion engine in the utilization of fuels, by R. H. Fernald. 1912. 42 pp.

Technical Paper 10. Liquefied products from natural gas; their properties and uses, by I. C. Allen and G. A. Burrell. 1912. 23 pp.

Technical Paper 16. Deterioration and spontaneous combustion of coal in storage, a preliminary report, by H. C. Porter and F. K. Ovitz. 1912. 14 pp.

Technical Paper 20. The slagging type of gas producer, with a brief report of preliminary tests, by C. D. Smith. 1912. 14 pp., 1 pl.

Technical Paper 25. Methods for the determination of water in petroleum and its products, by I. C. Allen and W. A. Jacobs. 1912. 13 pp.

Technical Paper 26. Methods of determining the sulphur content of fuels, especially petroleum products, by I. C. Allen and I. W. Robertson. 1912. 13 pp.

Technical Paper 31. Apparatus for the exact analysis of flue gas, by G. A. Burrell and F. M. Seibert. 1913. 12 pp.

Questions and Answers

A DEPARTMENT FOR THE SOLUTION OF THE KNOTTY PROBLEMS CONFRONTING THE CLAY WORKER

This department was inaugurated to be of material benefit to the readers of "Brick and Clay Record" and no charge is made for the service given. The advice of the world's recognized authorities in ceramics is offered to clayworkers who are invited to avail themselves of the opportunity to have their problems solved here. Should a reply be desired by letter enclose a stamped and addressed envelope for reply.

Imported Seger Cones.

We have received a letter from Otto Pommer, of Quebec, Can., regarding imported Seger cones; it came to us about the same time that we had received a letter from a German correspondent, who gave us the name of a New York concern, which, we understand, carries the imported cones in limited quantities. Mr. Pommer says: "The original Seger cones are not sold in America—they are manufactured by Prof. Dr. H. Seger & E. Cramer, Berlin (Germany) N. W. 21. The imported cones will be rather expensive and I do not believe that there will be any difference between these and the cones made by Prof. Orton at Columbus, Ohio. The formulas for these cones are well known. The German firm makes, since a few years, a new series of cones cutting out the use of ferro-oxide, in this way getting a better result than was obtained with the old series. The cones are sold in Germany at about 1-1/4 cents each, packed one hundred in a package. Write to this concern in English and they will quote prices."

Wants Small Continuous Kiln.

82. *California—I am arranging to equip this yard with a small, modern brickmaking plant. The old company burned brick in the old style, updraft field or scove kiln, but I think I can get better results by installing a continuous kiln, providing I can find one that can be worked successfully with a plant that has a daily capacity of* 30,000 *to* 40,000. *All of the continuous kilns I have investigated have been too expensive for the small manufacturer.*

"Brick & Clay Record" will be glad to give the correspondent's name to anyone who builds a kiln with so small a capacity as that quoted.

Denison Tile Patents Very Broad.

156. *Ohio—What does the Denison Interlocking Tile patent cover? I am informed that it is very broad and would like to have a definite answer.*

Several clay workers recently have asked "Brick and Clay Record" to inform them just what the Denison Interlocking Tile patent covers. In order to answer them carefully, a copy of the Denison Letters Patent No. 13299, was secured and this not only was studied carefully, but was submitted to a prominent Chicago firm of patent lawyers, Dyrenforth, Lee, Chritton & Wiles, and their aid obtained in replying to these inquiries. One inquirer asks whether the Denison Interlocking Tile patent is limited to the use of "T" shaped tile.

The invention is covered by nine separate claims. The first two claims read as follows:

"1. A building block for wall structures consisting of two hollow rectangular members connected in interrupted relation to provide a top made up of two independent mortar beds, and provided with two outer walls and two inner webs whereby when a plurality of said blocks are imposed one upon another in a wall structure, said webs stand in vertical tiers throughout the structure.

"2. A hollow building block having opposite faces interrupted intermediately to provide whichever side is uppermost, a top consisting of two mortar beds only, said block having two vertical internal webs normal to the mortar beds and positioned respectively beneath the inner part of said mortar beds, whereby when the blocks are placed surmounting one another in a wall there are provided two vertical tiers of internal webs."

Mr. Dyrenforth, in giving his opinion on this matter states that the invention is not limited to the "T" shaped tile, but that the essence of the invention is, any tile which has two separate beds or two interrupted beds, and in which tile one or more of its vertical webs are so positioned as to be susceptible of standing in vertical alignment with vertical webs of other similar tiles when built into a wall structure. To quote Mr. Dyrenforth:

"Broadly stated, the Denison patent covers any hollow building-tile having independent, because interrupted, mortar-beds with webs adapted to align in vertical tiers when a plurality of the blocks are imposed one upon the other in a wall structure."

It would therefore appear upon the authority quoted that this patent does not limit its owner to the "T" shape in which it is usually made, and that the patent is broad, in covering any shape of tile that embodies double interrupted beds—one or more of whose vertical webs stand in vertical alignment with vertical webs in adjacent tiles above and below.

Has Air-Slaked Lime For Sale.

148. *Illinois—We have a quantity of air-slaked lime on hand and know that there must be a market for this material, either in large or small lots. Can you tell us who uses it?*

This inquiry comes from a well-known Chicago concern, which is equipped to make deliveries by wagon load in Chicago, Ill., or by full carloads, or less than carloads out of town. "Brick & Clay Record" will be glad to hear from anyone who can enlighten them on the subject.

Clay Haulage By Endless Rope.

147. *Minnesota.—In your issue of May 1st, page* 751 *we note the answer given to a question regarding clay haulage from the pit. Our grade or incline to the clay bank is very slight and the cars will not run back to the farther end. We would appreciate the favor if some one would explain through your paper, or otherwise, just how the cars may be pulled both ways by wire rope as mentioned in the article above alluded to.*

We are advised by an expert in wire rope and aerial tramways that there are two ways by which the clay cars could be pulled both ways by wire cable, the first being by the "endless rope system" which consists of a wire rope spliced endless, working over a drum located at either end of the haul. By means of special grips mounted on the cars, the latter may be attached or detached to the pulling rope at any point. When applied to a single track haul, the motion of the rope is reversed for the return of the empty cars. The second method would be what is generally known as the "tail rope" system, which consists of two ropes, wound on separate drums located on the same shaft. The main rope runs along the ground and is attached to the front of the loaded car. The tail rope is supported directly over or to one side of the track and extends to the end of the haul, where it passes around a wheel or sheave and is returned along the ground, being attached to the rear of the car. When the main rope is wound on its drum, the load is hauled up, followed by the tail rope. For the return trip, the motion is reversed, the tail rope being wound on its drum and the empty cars drawn to the end of the haul, dragging the main rope.

Wants Book of Small Brick Houses.

132. *Texas—Some time ago we noticed in some clay book an advertisement of a book containing brick houses, showing their cost, plans, etc., in comparison with frame houses. Do you put out such a book?*

We think you will find what you want in "Radford's Brick Houses and How to Build Them." and we have this book listed for sale in our "Clayworkers' Library." The best book of comparative costs of brick and frame construction is "Cost of a House" published by the Building Brick Association of America. Its address is Marbridge Building, New York, and the price of the book is very small—about 10 cents.

Wants Cost Accounting System.

131. *California—We noticed an article in "Brick and Clay Record" some time ago by D. C. Haeger, of the Haeger Brick & Tile Co. on cost accounting; we are very much interested in this subject and want to get into communication with Mr. Haeger—will you furnish his address?*

We have given the address requested and want to add that a cost system is being compiled by the officials of the American Face Brick Association, R. D. T. Hollowell, Secretary, Park Building, Pittsburgh, Pa.

Canadian Import Duty and Prices.

154. *Pennsylvania—Will you please inform me what the duty is on brick exported from the United States to Canada and the market price on high grade face brick in the various Canadian cities?*

Canadian customs charge 22½ per cent on the factory selling price, so, if you are accustomed to selling your brick at $12.00 per M. at the plant, they cost the Canadian dealer $14.70 per f. o. b. cars your shipping point. Add to this the freight from your plant to the various Canadian cities and you will obtain the full cost. While no positive information is at hand, it is safe to figure that dealers in Canada add a margin of from $3.50 to $5.00 per M. to their total net cost, including yard price, duty and freight. This will give you a fairly safe approximate of the selling price of any high grade brick. Severe penalties are attached to the undervaluation of the brick by the American shipper in order to absorb the duty. Canadian customs are distinctly for the protection of home industries and they take great precautions against undervaluations on this side of the border.

Wants to Know About "Haverstraw" Brick.

151. *Minnesota—Please let us know what is the size of the brick called "Haverstraws." We are not certain whether they are a standard size hollow brick or whether they are a double hollow brick—that is, 4 in. x 5 in. x 8½ in., but we are inclined to think the latter.*

The term "Haverstraw size" is used in architects' offices as indicating that the hollow brick so described will lay up in a wall built of Hudson River common brick which is 8 in. x 2¼ in. x 3½ in. They are manufactured in the East by the Sayre & Fisher Co. and by the National Fireproofing Co. They are hollow, but they are not double hollow brick. They are called "Haverstraw" because they are made to conform to the size of the brick made in the Haverstraw district, which is the centre of the common brick industry of New York.

Wants Prices on Silica Sand.

153. *Colorado—How, or on what sort of a tonnage basis are leases made for quarries or deposits of silica sand? I am interested in a silica deposit and am thinking of leasing it to some one who would make sand-lime brick. I am not, however, familiar with the market price of silica sand or of gannister rock.*

Silica sand, made by crushing sandstone, grinding it between rollers, drying it by intense heat, putting it over screens and cleaning it by the application of air-suction, produced by large fans applied to the sand as it passes through some of the processes named, is sold for from $1.00 to $1.25 per net ton, carloads, f. o. b. factory, and is used for steel moulding and open hearth furnace work. Just what silica sand is worth in connection with the sand-lime industry depends upon the relative cost of the sand, the lime (and any other material that may be added) added to the labor and the "curing" cost, as compared to the selling price of sand-lime brick in the vicinity of the silica sand deposit. The same may be said of silica brick, except that in the latter, while the sand is a larger factor than it is in sand-lime brick, the other costs of production are so much higher than in sand-lime, and the selling price so much higher, that the cost per ton on the sand, is not so important an item. It may be that some "Brick & Clay Record" readers, interested in either sand-lime brick, silica brick or steel moulding sand may be interested in a Colorado proposition and if so, will write us, in which event, we will be glad to bring the inquirer and the interested ones, together.

Brick Houses vs. Frame and Concrete.

143. *Maryland—We want to show a slide in a moving picture machine, giving a good substantial brick house, a frame house on fire and a cement-block house tumbling down in course of construction. Can you supply us with photographs and tell us how they can be transferred to the glass slides?*

We will be glad to supply our correspondent with photographs of good brick houses, if he will tell us what kind of houses—that is, what cost price—will appeal to the people to whom he wants to show the slides. We have no pictures of houses burning, nor of cement block houses tumbling down in course of construction. Your local photographer will make the slides for you, the process being very simple. Any dealer in photographic supplies will sell you a book telling you how to make them yourself, which you can do, if you have a camera and a dark room.

Hollow Blocks for Silos.

149 *Illinois.—Can you put us in touch with one or two concerns that manufacture hollow blocks for silos?*

Will readers of "Brick & Clay Record" communicate with the Editor, sending, if convenient, any printed matter they may have on the subject?

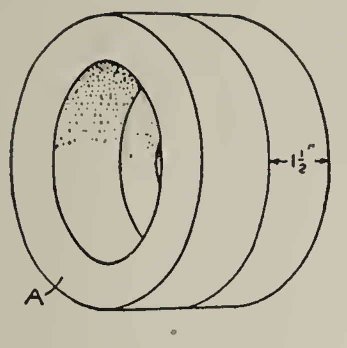
The Superintendent

A DEPARTMENT CONDUCTED FOR THE INTERCHANGE OF IDEAS IN METHODS OF MANUFACTURE

Contributions from our readers are solicited for this department on any subject pertaining to the manufacturing end of the industry. Short cuts and labor-saving suggestions are particularly sought. Address all communications to the Editor of the Superintendent Department. Brick and Clay Record, Chicago.

The Selection of Emery Wheels.

The somewhat prevalent idea that an emery wheel will do for any kind of work is largely erroneous. Of course, no matter what the grit and grade of the wheel may be, or the kind of work applied to it, the grinding will be accomplished to some extent, and even the amateur who does but a few hours' work a day will gain time by having two or more wheels. But a wheel which will cut cast iron rapidly will be a failure if used on soft steel; a wheel which grinds hardened tool steel and leaves a smooth finish will, while it is cutting freely without heating, clog up, heat and burn a piece of mild steel. The selection of proper grit and grade is of the highest importance and in this manufacturers are exceedingly willing to aid.



An emery wheel is built up of millions of little sharp-cutting particles held in a bond. To do the best and most work, each particle, before getting really dull, should break out of the bond, making way for a new cutter to be brought to the surface. The wheel in which the particles retain their edge longest, yet break out at the proper time before heating and clogging become excessive, is the most efficient and therefore the most economical.

That a wheel may be compounded for a purpose and be good for no other, is illustrated by the following instance: A cup or cylindrical-shaped wheel was made for grinding certain steel articles, the work being applied to the face A. After four months of continuous service the wheel was worn down until nothing but the backing—a plain disk, 12 in. diameter, and 1½ in. face—was left.

This was used for another grinding operation on the same places by applying the work to the face of the remaining part of the wheel. This part of the wheel was worn out in 24 hours, which proved that the wheel could be used only as it was intended, if economy and efficiency were desired.

USEFUL THINGS TO KNOW.

To make a non-rusting soldering flux, dissolve small pieces of zinc in hydrochloric acid in the usual manner and, after it has been allowed to stand for some time, remove the undissolved zinc and filter. Mix with one-third its volume of chemically pure ammonia and dilute as necessary for the work.

One of the latest uses of the oxyacetylene flame is the cleaning of scale from boilers. The application of this flame to the scale detaches it quickly from the plate, owing either to expansion or to the generation of steam between the scale and the plate. At a recent demonstration on an old boiler, the scale fell away after the flame had been applied for a few seconds, and without injury to the plate. With the flame, parts inaccessible to the chipping hammer were easily cleaned.

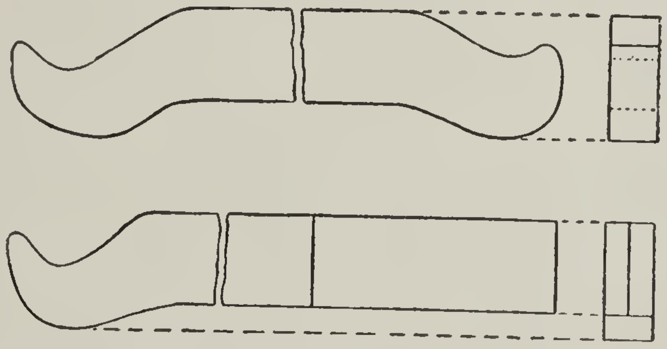
A flux that can be used for tinning surfaces of metal without any previous cleaning is made as follows: Dissolve 1 lb. of zinc in muriatic acid and add 22 oz. of sal ammoniac to the solution, which is then allowed to evaporate and crystallize. The yield is about 2¼ lbs. The salt is moistened and brushed on the metal to be soldered or tinned. Solder will flow readily on this surface.

When in need of a lockout for pipe fittings one can be made by cutting the bead from the threaded opening of pipe tie. The tie is placed in the jaws of a vise or turned on the end of a pipe and a backsaw used for removing the threaded part.

Steam jets are being advocated as the means of cleaning dirt and grease from machinery, shaftings, journal boxes, pulleys and the like.

To Remove Key Bars.

With two key bars of the shape shown in the illustration the work of fitting and removing keys from flywheels, driving gears, etc., becomes an easy task. The bars may be used for either large or small keys and are both made of tool steel, ⅝ in. thick, 1¼ in. wide and 2½ ft. long. These are forged into the shape shown and tempered.



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Paving Brick

It was only a few years ago when the paving brick manufacturer looked upon an order for some hundreds of thousands as a "pretty good business," but today that same manufacturer turns up his nose at the thousands, and goes after the million or more order. So great has the stride been in the manufacturing of paving brick and so great is the agitation for the brick-paved street and highway, that the paving brick manufacturer is brought face to face with a greater amount of business than he ever dreamed possible.

It is the day of the march of progress in the paving brick industry. Here is the manufacturer who has recently bought a paving brick plant and who is about ready to start operations. His first order is for between three and four million paving blocks. A few years ago this manufacturer would have thought himself lucky if his first order was for a hundred thousand.

Not since the first paving brick was made has the business been as good as it is this season. This was anticipated in a news report in "Brick and Clay Record" some months ago. The manufacturer of paving brick who is not crowded with orders, is himself only to blame, for either he is not making a good block or else his plant is not equipped to turn out the volume which the contractors and municipalities demand this season.

On top of all this is the question of price. The market for paving block is up—not a great advance over lists which prevailed a year ago but just enough to cover the cost of improved manufacturing and untoward labor conditions. All of these facts prove that the paving brick manufacturer is facing the opportunity of his career. The demand for his material has been created through clever publicity, and publicity of a character which was sure to bear fruit. It seems but a few years ago that the publicity question first came up for consideration. How timidly the question was handled and how much doubt was expressed. But times have changed, and now the manufacturers are urging more and more publicity. They have found that it pays.

Publicity and organization are the "Gold Dust Twins" that are doing the work for all paving brick plants. That they are simply crowded with orders, no matter in what state the plant is located, shows the wide scope of the movement. Business is as good in one part of the country as in another.

There are signs that San Francisco, Cal., is at last waking up to the importance of paving brick. The experimental block laid on Powell street some time ago is considered the best paved block in the city, and arrangements are being made to give brick a trial on streets carrying a heavier traffic. The board of public works recently awarded a contract for 100,000 paving brick to the Denny-Renton Clay & Coal Company of Seattle, Wash., at $47.50 per M., and it is understood that the material will be used on First street between Market and Mission. The traffic on this block is said to be the heaviest in the city, and if paving brick stands up as its promotors expect, its future in San Francisco is assured. One of the greatest difficulties up to this time has been the apparent impossibility of making suitable pavers of material near at hand, several costly experiments in this line having been abandoned, after severe financial losses.

An excellent suggestion has been made by Maj. W. W. Crosby, M. Am. Soc. C. E., and published in a recent issue of "Good Roads." It is that a standard definition be given the terms and expressions used in connection with highway work and street paving, as well as the materials employed in road construction and maintenance. New words are being coined and trade-marked terms advertised until they are fast becoming generic. A very complete list of names and terms is given, together with excellent definitions and it is a fair inference that, if the word or name is not listed, a better word or name, describing the same thing, has a place. The subject will be discussed and Maj. Crosby's list offered for adoption at the London (Eng.) Congress of the Permanent International Association of Road Congresses, which will be held during the present month.

In order that certain safeguards may be thrown around the expenditure of a million dollars, for which it is proposed to bond Hillsboro County, Fla., the money to be used in the building, repair and maintenance of brick roads, the Tampa Board of Trade named a committee of five to confer with the five county commissioners, the vote of the combined ten to determine where the new roads shall be built. It was considered best, as a general proposition, that the county build highways in the direction of the county seats of adjoining counties, where such adjoining counties show a willingness to cooperate by building similar highways from their capitals toward Tampa.

Faving brick "boosters" of Wichita, Kas., are trying to prevent the paving of East Douglas avenue, in that city, with asphalt, claiming that many of those who signed the petition for asphalt did so under the delusion that the total cost would be $1.25 a square yard. "Now they are learning that the cost of concrete base and binder is not included in that price and some of the property owners who signed are taking their names from the petition." An injunction is hinted at, by the brick men, as a last resort.

The Hamburg (Pa.) Vitrified Brick Co., is short of men and fears are expressed as to the labor situation becoming still more acute. Every industry in Hamburg is working to its fullest capacity and if more help can be secured, the town will thrive wonderfully during the present year

Paving brick men are being called upon to submit bids for more than 1,000,000 vitrified paving brick to be laid in and south of Sarosota, Fla. The board of public works have decided on brick as the paving material that will be used and, in all probability, the road running south, along Sarosota Bay, now under contract for rock surface, will be changed to brick .

Concrete Pavement Disintegrates.

The concrete pavement on Blue Avenue and on Crysler Avenue is going to pieces very rapidly. Holes have appeared in many places and from each little break the pavement ravels out like an old yarn sock. The experiment of putting down this class of concrete pavement is liable to prove quite expensive to the city and to the people who have to pay the tax bills. The company which laid these pavements ought to be notified immediately under their maintenance bond and made to place the pavement in proper condition and keep it so during the life of the bond. Probably the best treatment which can be given this pavement ultimately will be to place a surface of asphalt over the top of the concrete now used as a pavement. The engineers say this can be done very readily. Of course, this treatment would mean another tax bill assessment against every property owner along the street, and such an order need not be made until the city has exhausted all resources against the company which laid the pavement.—*Independence, Mo., Jackson Examiner, June* 13, 1913.

Macadam Will Not Stand Heavy Traffic.

Commenting upon the condition of the macadamized streets of Watertown, N. Y., Commissioner W. O. Ball, of the Board of Public Works, stated that the summer's wear had been especially severe upon the macadam pavement. Mr. Ball expressed the belief that the rainy weather had been an important factor in the wear and tear on macadam, as well as the heavy travel and automobiles, many of which were equipped with anti-skid chains, on account of the slippery condition of the streets and country roads. It is thought that it will be necessary to resurface and repave some of the macadamized streets at Watertown, as in many cases there are deep impressions, while at other points the crushed rock appears to be working to the surface.

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OHIO BRICK FOR OHIO ROADS.

Brickmakers Urge Governor Cox to Use Home Product on State-aided Highways.

Headed by President Charles Deckman and Secretary W. P. Blair, of Cleveland, a delegation of twenty Ohio members of the National Paving Brick Manufacturers' Association called on Governor Cox at Columbus, June 11, and urged the use of Ohio-made paving brick in the construction of the state's system of market and inter-county roads. They promised hearty co-operation if the state undertakes to manufacture its own brick for use in resurfacing public highways.

The governor asked if the prices of paving brick had not been kept up by combinations, and they insisted that there had been no such connivance on the part of manufacturers to their knowledge, for ten years or more.

William P. Blair, of Cleveland, was the principal speaker for the manufacturers and he gave his personal assurance that no combination existed and none would be countenanced.

Governor Cox declared he had seen good roads made of the right sort of gravel over which the split-log drag had been used, and the manufacturers admitted that in certain parts of the state that had brought good results. They want brick used on the state highways in the level portions of the state.

The gathering of brick men and the call on the governor was caused by the report that during the last year the county commissioners of half the counties in the state had been taken on a junket out of the state by cement manufacturers who wanted concrete roadways constructed because they require the use of large quantities of cement. The brick men, in reply to questions said their profits would not permit them to finance any junket trips, and they feared their industry would suffer if the administration was not interested.

The brick men expressed confidence in the ability and integrity of Highway Commissioner James R. Marker, and said their relations with him had been pleasant and satisfactory. They complained bitterly of the incompetent inspectors put in charge of work by county commissioners, where faulty work, found later, was certain to hurt the credit of the brick used.

Governor Cox told them if the manufacturers would supply the right quality of brick at the right price there would be no trouble in securing enough of the work to brick, to make the results more than satisfactory to paving brick interests.

NEED LARGER CERAMIC BUILDING.

Trustees of Illinois State University Considering Allotment of $65,000 Appropriation.

With a meeting of the Board of Trustees of the Illinois State University in Chicago some day this week the questions of an increased appropriation for the proposed new class rooms and laboratory building of the ceramic department will be discussed and probably disposed of. The amount now planned is $25,000, but the clayworkers of the state declare this insufficient and are urging that the amount be increased to $65,000.

The Illinois Clay Manufacturers' Association, through its secretary, A. E. Huckins, of Champaign, Ill., is back of the campaign to urge upon the Board of Trustees the importance and the necessity of setting aside the larger sum. Secretary Huckins and those interested in the ceramic school, argue that $25,000 is too small an appropriation for a building of the nature planned and required and have been very active in working up a sentiment favorable to the increased appropriation.

In the last week of June, Secretary Huckins enlisted the services of "Brick and Clay Record" in getting the members of the clay product industry in and around Chicago to exert their influence with the board, which was scheduled to hold a meeting in Chicago, June 25. The appeal from Secretary Huckins came at noon on June 24, which gave "Brick and Clay Record" rather short notice. However, before many hours a score or more of influential brick dealers and manufacturers, as well as others interested in the allied industries, had been called upon personally by the editor of this journal and the proposition outlined to them.

Before close of business that day each of the three members of the University Board living in Chicago—William L. Abbott, Mrs. Ellan M. Henrotin and Arthur Meeker, had been beseiged with special delivery letters, telephone messages or personal interviews and they were made to feel that there was more than a passing interest in the proposed new building and the amount of money to be appropriated.

The meeting of the board as held according to schedule, but evidently the campaign, brief as it was, had the desired effect, as the matter of the budget was postponed until a meeting that is to be held the first week in July.

"We received a number of letters and telephone messages," said William Abbott, one of the Board, to a representative of "Brick and Clay Record," immediately after the meeting June 25, "and we decided not to take any definite action about the appropriation until later—probably next week sometime.

"We are pleased to see so much interest manifested in the ceramic department at the University and especially by the clayworking interests of the State. We are not making any promises just now but we will say that we are giving deep consideration to your suggestion to be liberal with the appropriation."

At the last annual meeting of the Illinois Clay Manufacturers' Association held in Champaign last winter, the question of the proposed ceramic building came up for consideration and a resolution was adopted indorsing the plans and promising support to the movement.

Considerable influence was brought to bear on the State legislature to set apart a specific amount—say $65,000 for the proposed building. The Legislature, however, saw fit to enclose the ceramic appropriation in the general appropriation for the State University and left the Board of Trustees empowered to give the ceramic department whatever amount it found in its judgment to be required.

It is understood that certain members of the Board in discussing the budget, felt that $25,000 was sufficient for the proposed building. Immediately upon this statement becoming known Secretary Huckins of the State association set into motion the machinery of his organization. It is to be hoped that the influences thus brought to bear on the University Board will have the desired effect.

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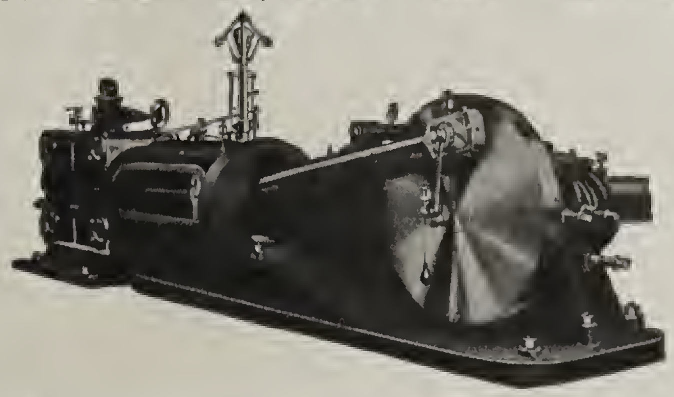

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Common Brick

Far more serious in its immediate result than the tariff and of much greater importance to brick manufacturers than the income tax, is the growing scarcity of common labor; a prominent common brick maker in the East, discussing this situation, recently said, "We brick men who are dependent largely upon foreigners for labor, that is Hungarians, Roumanians, Italians and lately, a few Spaniards, together with negroes who are annually brought up from the South, are affected by conditions entirely outside of our own sphere of influence. In my own case, thirty families, answering to the patriotic call of help from their native countries, have crossed to the other side of the Atlantic and none of these has returned.

"We are also aware of the liability of many who have returned to Austria, Bulgaria and Roumania to remain in their native country because of the law which compels men over sixteen years of age to remain for military service. This has caused such a condition in this country that the average manufacturer of today is running less than one half his plant. There is no doubt, however, of our ability to supply the present needs, and we are experimenting now with five different labor-saving devices which will place us in a position, we hope, to proportionately, at least, make up for this increasing lack of men on the brick yards.

"When men who, because of the nature of our business, are compelled to begin work at four and five o'clock in the morning in order that the brick may be exposed to the heat of the sun for a maximum length of time, can find labor in other industries where this condition does not exist, you can appreciate that ours will not be popular."

The key to the situation seems to be the invention, test and eventual use of labor-saving devices in all branches of the industry which depend upon foreign labor for their very existence. Conditions such as those mentioned above are not conducive to long-time employment and, unless the stream of "green" labor flows steadily, plants and capital will stand idle. What are you doing to encourage the inventor and the machinery salesman?

A new brick machine has been put in commission at the Whittlesey (Wis.) common brick plant of the Langenberg Brick Manufacturing Co., and this yard, together with the yards owned by the same company just north of Stevens Point, Wis. are now running full. Owing to the mildness of the past winter, allowing building operations to proceed almost uninterruptedly, there is a scarcity of common building brick in Wisconsin and the demand is far in excess of the supply.

A petition for the dissolution of the C. J. Craycroft Brick Co., as a corporation under the laws of California, has been filed in Fresno, Cal. The petition states that at a meeting of the stockholders, it was decided by all present to dissolve as a corporation. The directors are C. J. Craycroft, Laura C. Craycroft, Mae Craycroft and J. W. Craycroft.

What is claimed to be the largest brick plant in Canada is nearing completion at Varennes, Que., on the south shore of the St. Lawrence river, opposite Bout de L'Isle. The property is traversed by the main line of the Quebec, Montreal & Southern Railway and the deep-water ship channel passes within thirty feet of the company's river frontage. The owners are the Mount Royal Brick Company and the output, for the present, at least, will be confined to common building brick. Later it is intended to install machinery for the manufacture of face-brick, fireproofing and drain tile, the clay being suitable for all of these products, and burning to a rich red color. The plant was designed by competent experts from the United States, in conjunction with Ross & Macdonald, architects, of Montreal, and is being constructed by the Canadian Stewart Co. The brick machinery is being supplied by the American Clay Machinery Co., of Bucyrus, Ohio. The machinery building is of structural steel and is fireproof. The entire plant will be operated by electricity, including the clay bank railway, and the traction of all cars and trucks employed throughout the dryers and kilns. Several months ago a contract was entered into for the supply of electric power and a special transmission line is being constructed along the south shore to bring Shawinigan power to the plant, and this power will be turned on at the beginning of the present month. The Haigh patent removable top continuous kiln which is being installed, and which covers about one-half a mile in length, is the last word in brick kiln construction. It will permit of the use of the Penfold system for the purpose of placing the green brick in the kiln before burning, and for loading the finished brick from the kiln into cars for shipment. The necessary draughts for the kiln will be supplied by four 20-inch motor-driven fans, thus obviating the expensive construction of the tall chimneys customarily seen upon brick plants.

Eastern builders, architects and building material supply interests are acting on the assumption that, after a short while, they will be able to purchase materials cheaper than they at present can. The result is that while the West, most of the South, and that part of the Northwest not closely affiliated with the Great Lakes, are showing a remarkably active building year, according to agencies, construction in New York and New Jersey has dropped off almost fifty per cent.

Mexican laborers employed by the Elgin & Butler Brick & Tile Co., and the Standard Brick Co., both of Elgin, Tex., have entered into a general strike, having demanded eight hours' work at the same rate per day as they received for ten hours heretofore. The white and colored labor did not participate in the strike and will continue to work unless violent interference is made by the Mexicans.

Having spent a small fortune in rehabilitating its plant at Cincinnati, Ohio, the J. M. Blair Co., has just completed a contract for supplying 3,000,000 common brick to the new Union Central Station at Cincinnati. This plant was one of the worst sufferers during the recent floods.

As a result of continued advances in the cost of lumber, brickmaking, once a prosperous industry in Haverhill, Mass., is to be revived. A prominent real estate and insurance man in Haverhill claims that, owing to the constantly increasing lumber quotations, brick houses can be constructed at as low an initial cost as those of frame construction.

The Marshall (Tex.) Brick Company has its new machinery working smoothly and the clay is now mined by machinery and carried on mechanical conveyors to the hopper. The company is running behind its orders, although its output is nearly 1,000,000 bricks a month. Another increase in stock is imminent, it being reported that the company will start another plant nearby.

Several improvements have been made to the Crookston (Minn.) Brick and Tile Co.'s plant and it is now turning out approximately 40,000 brick a day. The first kilns of this season's run will open in a few days, the season having been shortened by the lateness of the frosts.

An order for twenty-two carloads of common building brick has been received by the Lofland Brick Co., of Milton, Del. The material is to be used in the erection of a large pickling plant at Greenwood, Del.

After having some little difficulty with gas, which was quickly overcome, the Adamantine Brick Co.'s plant at North Mountain, West Va., is now in operation and a majority of the eighteen kilns are under fire. About a million brick can be burned at one time.

The Gordon brick plant at Vegreville, Manitoba has been sold to the Vegreville Brick Co., of which A. B. Mitchell is manager. A power plant has been erected and the yard is running to capacity.

Florin & Son, of Minneapolis, Minn., will start a brick plant at Canora, Sask., in the near future, having secured temporary quarters. Permanent buildings will be erected later in the season.

A receiver has been appointed to wind up the affairs of the Armstrong Brick Co., of Morristown, N. J., the company having ceased to operate more than two years ago.

More than 4,000,000 common brik were sold in one week, the early part of June, by the Milledgeville (Ga.) Brick works. This is a record for that part of Georgia.

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Manufacturers of
THE CELEBRATED EGYPTIAN PAVING BLOCK
THE BLOCK THAT STANDS THE TEST
Prices and samples furnished upon application
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Fire Brick

With a capital stock of $150,000, of which $100,000 is common and $50,000 is seven per-cent cumulative preferred, the Standard Fire Brick Co. has been incorporated under the laws of the state of New Jersey. The company will operate two plants in Ohio—one at Empire and the other at Irondale. The main offices will be maintained in the Diamond National Bank Building, at Pittsburgh, Pa. N. W. Ballantyne, for many years the head of the West Virginia Fire Clay Co., is president of the new company, while C. W. Arnold, a well known figure in Pittsburgh financial circles, is treasurer. In 1907, the former plant of the Standard brickworks at Empire, Ohio, was destroyed by fire, the property lying idle since. The work of rebuilding has been started and the rehabilitated plant will be equipped throughout with individual drive motors, nearly $5,000 having been spent on this feature alone. Wherever manual labor can be saved and mechanical forces brought into play, such will be done. Along this line, instead of having a lot of common labor at the pans, a hoist and clam-shell scoop will be used, so that two men will do the work that ten would have done, under the old system. The new buildings alone will cost upwards of $15,000 and it is estimated that the total cost of the improvements will be somewhere around $30,000.

By order of W. S. Rowell, referee in bankruptcy, the real estate, improvements, machinery and plant of the Crucial Fire Brick Co. will be sold before the court house door, in Floyd County, Ga., between 10 o'clock in the forenoon and 4 o'clock in the afternoon on the first Tuesday in July, 1913, at public outcry, to the highest bidder for cash.

New boilers of much larger capacity than those previously used have been installed at the Brickton (Ill.) plant of the Chicago Retort and Fire Brick Co. Other improvements and additions have been made that will augment the capacity considerably.

ANACONDA-MADE REFRACTORIES.

Ware Produced in Electrically Operated Montana Plant Second to None.

Anaconda brick are known all over the western part of the United States. Even into British Columbia and Old Mexico the product of the brick department of the Anaconda Copper Mining Co. is shipped. The brick made at Anaconda are well and favorably known for their heat-resisting qualities and are in great demand for the construction of smelters and other plants in which high temperatures are employed.

Superintendent J. T. Gunniss has a force of 40 men employed in making the various kinds of brick. Electric equipment is installed in this modern plant, which is making the name of Anaconda known far and wide in smelting circles.

There are nine kilns at the plant, each with a capacity of from 25,000 to 30,000 and each is connected with a tunnel flue through which the heated gases are driven to the bee-hive shaped kilns. From the top the hot, moist gas is driven by a fan through the building, which thus is heated with a waste product.

The concern owns a large deposit of quartzite at Brown's quarry. The plastic clay is shipped from Armington in the southern part of the state and fire clay is secured from Lost Creek. The material is unloaded from the cars and run through two crushers and elevated into bins, where it is held until used.

Besides brick in the usual sense, the plant has stored in its warehouse large quantities of finished slabs for various purposes, such as arches, keystones, wedges and other odd shapes used in various kinds of construction.

Face Brick

Twenty years ago, few brick manufacturers felt that they were in a position to compete for business unless they had a complete outfit of steel moulds in which to make ornamental brick in various classic forms, including "egg and dart," "water-leaf" and "bead-and-button." The pressed brick plant that had no "catalogue" was at a great disadvantage, and, much as the manufacturers disliked brick orders that included "shape brick," they were regarded as a necessary evil and one of the many hardships with which the man who had embarked upon the hazardous enterprise of turning green clay into good building brick, had to contend.

Prices were set upon these fancy shapes which would seem prohibitive. Standard size bricks for stretcher courses were sold at $100.00 per M. and headers at $75.00. Quoins or returns brought $250.00 per M. Little difference was made in these prices, whether the brick was to match an iron-spot retailing at $25.00 per M., or a red that sold for $20—one cost as much to make as the other.

No end of difficulty beset the men who made these brick and no end of disappointment met the man who tried to use them. Where the yard that made them ran on one color exclusively, as, for instance, red, a fair stock of any shape desired could be carried in stock and "matched up" to the shade of the plain brick. But on yards that made two or three kinds of brick, and particularly where one or more varieties were edge-set in the kiln, the difficulty of matching was hard to overcome. Imagine, for instance, a light-burning clay that, mixed with pulp manganese, made a gray brick. Here the trouble in getting headers to match the faces of the brick was great—the shrinkage of the brick allowing spaces through which the fire reached the headers and "flashed" them to a yellowish brown color—the while the faces were protected by being set together. The shape brick, with projections, could not, of course be set face to face or otherwise protected, and the results were sad, to a degree.

Many manufacturers overcame the matching trouble by setting the moulded brick on the lower benches, where, receiving less fire, they burned to a light shade, but they seldom, if ever, succeeded in overcoming the tendency of these bricks, which had to be flat-set, being actually flashed, even while they did not show it. The direct flame gave them a glaze that the faces of the edge-set brick lacked, and though they might look like the plain brick when first built into the wall, that great tester of quality—weather—soon showed them to be of a different nature from the brick they were supposed to be akin to.

Circular bays, with varying radii, "universal angles," panels, with internal and external angles, ornamental architrave forms, with arches that carried the lines of the ornament across window and other openings all seem to have belonged to a brick age that is fast nearing an end. Few architects have the temerity to specify stock shapes today, knowing it limits their clients to a small number of manufacturers and adds to the chances of disappointment and delay. It often means the burning of a special lot of brick—a burning that may, or may not produce the "right" color. And very few manufacturers care to take orders, knowing that they may have to burn the brick over and over again, with a resultant stock of un-

Triumph Steam Brick Dryer

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Absolute Control of Temperatures in all Kinds of Kilns and Furnaces
Heraeus Le Chatelier
PYROMETER
Recommended by the highest authorities

For measuring temperature between 0 and 1600 deg. Celsius, equal to 2920 deg. Fahrenheit. Successfully used in establishments for the manufacture of Brick, Pressed Brick, Terra Cotta, Pottery, Porcelain, Stoneware, Chamotte, Cement, Glass, Iron and Steel and other metals, particularly for Hardening and Annealing, also for Molten Metals, Cartridges and Ammunition, Chemicals, Gas Accumulators, and by Boiler Inspectors, Schools and Colleges.

Heraeus Patented Electrical Furnaces
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of every description This Heraeus Patented Fused Quartz Glass is not affected by any changes of temperature whatsoever, and the co-efficient of expansion is only 1-17 that of platinum. It is of the utmost importance for all purposes where the above qualities are essential. Write for information. Pamphlets and References on Application.

CHARLES ENGELHARD, Hudson Terminal Bldgs. 30 Cortlandt St., NEW YORK CITY

salable brick that will net them a loss on the contract.

Exception is made in the case of bullnoses—brick with one end of the face rounded into one header and reversing on each other—and so-called "octagon" brick, that, being made with the header forming a 45 degree angle to the plane of the face, are used to turn the corners of octagon bay-windows. The demand for these, however, is confined to a few cities, Chicago, Ill., being noted for the large percentage of these used as compared to other building centres.

Whether the gradual falling off in demand for ornamental brick is due to the unsatisfactory results obtained both by those who made and by those who used them, or is an indication of what has been called a "better understanding" of brickwork, is hard to say. When brick was used as a cheap substitute for and an imitation of stone, it was only natural that outlines peculiar to stone architecture should be called for in brick. Now, it would seem, brick is dignified by being used as brick—its mortar joints given true value and its varied colors taken into consideration and treated as factors in a decorative scheme that, in the old days of "all one shade and same as sample" needed the shadows of projecting moulded courses to relieve a monotony that was not only called for, but insisted upon.

Reports received from tests made on specimens of clay taken from an extensive deposit at Coughran, Tex., have encouraged local interests to begin the erection of a small plant for the manufacture of face-brick in that city. The clay is an oxide-shale and is splendidly suited for the manufacture of dry-pressed brick, while the over-burden of yellow clay can be utilized in the making of a lower grade of material. P. S. Knittle, of Coughran, was one of the men who conducted the tests.

Grand Rapids, Mich., is experiencing a small building "boom." McArthur "Mission" brick are being used in two residences at the corner of James and Wealthy Avenues, the order being secured by S. A. Morman & Co. Frederick H. McDonald has closed contracts for the Sligh residence and for a number of other good face-brick operations. He has also received orders for buildings in Bay City, Atkins and Lansing, Mich.

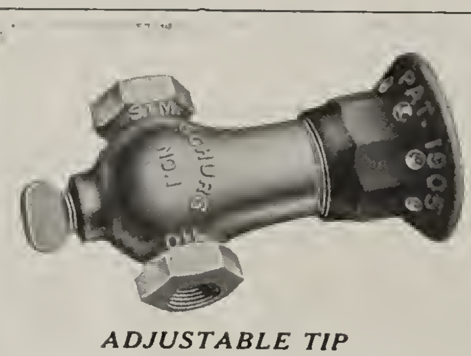
In announcing the consolidation of the firms of Fredenburg & Lounsbury of New York, and Houghtaling & Wittpenn of the same city, under the firm name of Fredenburg, Lounsbury & Houghtaling, Inc., we neglected to mention that since each of these firms has enjoyed success under separate management that with the organization, strength and prestige of the two combined, it is a reasonable expectation that even better results should be attained for the plants they now represent than the two firms have given, separately, in the past. With the exception of Mr. Houghtaling's personal interest in the Upper Kittanning Brick Co., none of the stockholders composing this new company own a share, directly or indirectly, in any brick plant. This statement is made without reservation and for the purpose of assuring a continuance of the truly impartial representation given in the past, unbiased by pecuniary interest in any particular property. The Portland cement business and other interests of Fredenburg & Lounsbury will be continued under the old firm name and the same partnership.

Hy-Tex brick, made at Brazil, Ind., will be used for facing the new apartment house at 31st and Dewey Ave., Omaha, Neb.

See Our List of
CLAYWORKERS BOOKS
PAGE 16

KoPPeL Cars
and Equipment—Rails, Frogs, Switches, etc.
Prompt Deliveries *Write for Catalog*
Sales Offices:
New York Chicago Pittsburg San Francisco
Agents for Canada:
Canadian Fairbanks-Morse Co., Montreal and Toronto
Plant—Koppel, Pa.
Orenstein Arthur Koppel Co.
RAILS

We Reline Press Boxes
We reline any make and for any shape brick. No job is too exacting for us—none too small or too large
We make Kiln Bands, Kiln Band Lugs, and Grey Iron Castings for Grinding Pans. Special Foundry Orders are a Specialty. Submit sketch or specifications.
Repairs for
Brick Machinery and Dryers
We solicit inquiries from discriminating buyers. What are your requirements?
Bolivar Foundry and Machine Company
BOLIVAR, PA.



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EVEN { BURNS / COLORS
ADJUSTABLE TIP
THOUSANDS in USE
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SCHURS OIL BURNER CO.
LOS ANGELES, CAL., U. S. A.

PERFORATED METAL SCREENS
As required for
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USES.

PERFORATED SHEET METALS OF EVERY DESCRIPTION
HENDRICK MANUFACTURING CO.
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Manufactured
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HENDRICK MFG. CO.
CARBONDALE, PA.

Machines and Equipment

"Heating and Ventilating a Large Factory" and "Heat Transmission through Building Walls of Corrugated Iron" are the titles of two articles which the Green Fuel Economizer Co., of Matteawan, N. Y., has reprinted from the "Iron Age" and "Engineering News" respectively for gratuitous distribution. The first describes the hot-blast heating and ventilating outfit utilizing exhaust steam installed by this company in a large building, aggregating 2,400,000 cubic feet, of the Lee Tire & Rubber Co., at Conshohocken, Pa. The conditions were exceptional as regards the proportion of window surface, the size of the rooms and the rapid change of air required, but were successfully met by the equipment here described and illustrated.

The Stephens-Adamson Mfg. Co. announce the opening of an office in Boston, Mass., under the charge of Messrs. L. M. Colwell and R. A. McMullin. These men are both experienced engineers, familiar with the best practice in conveying engineering and competent to meet the varied problems that arise in the design of this machinery for its varied uses. No street address can be given until our next issue, but in the meantime correspondence addressed to Stephens-Adamson Mfg. Co., Boston, Mass., will secure delivery and receive prompt attention.

"Garbage Disposal Machinery" is the title of an attractive, illustrated booklet, published by the C. O. Bartlett & Snow Co., of Cleveland, Ohio. It treats of special machinery for economically treating and saving the values from offals and by-products from abbatoirs and fish canneries, as well as for the disposal of dead animals and garbage. Attention is called to the fact that more than half of the people in this country live in cities, and that all food products for their subsistence must come from the country. A strong plea is made for the return to the land of that part of the cities' refuse which will serve to enrich the soil and stop its present depletion.

Brown Instrument Co., manufacturer of the pyrometer bearing that name, is sending out a series of circular letters to the clay trade. The latest of this series is under date of June 19 and calls particular attention to the increased use of the pyrometer among clay workers to control temperature. The letters have a decided punch to them, and with the trade paper advertising this concern is doing, should aid in bringing in a large percentage of new business.

"Is there Rosin in Cling-Surface," is the name of a new 12 page booklet just issued by the Cling-Surface Co., Buffalo, New York. To prove that there is no rosin in this belt preparation the manufacturers show several fac-simile reports of chemical analyses made in England and Germany. Professor Orndorf of Cornell University is also quoted. The booklet lists many prominent users.

The sewer pipe factory, the stoneware factory, the drain tile plant, the White Hall Electric Railway Co. and a number of other industries at White Hall will be equipped with motor power, and will be operated from the big power dam at Keokuk, Ia. A transmission line is now being constructed.

The Edgar Allen American Manganese Steel Co., Chicago, Ill., has just issued Bulletin No. 57, which deals with the subject of "Sheave Wheels." The Bulletin may be obtained from the company at its Chicago office in the McCormick Bldg., Chicago.

Booklets describing the "New Vertical" and "New Haven No. 2" brick machines have been received from the Eastern Machinery Co., of New Haven, Conn. They are well worth reading and ought to be in the hands of every brickmaker. A card to the issuing company is all that is necessary.

The Chambers Brothers Company, manufacturers of brick machinery, have received the contract for the installation of new machines in the Sayreville, N. J., plant of the Sayre & Fisher Company.

A modern 80 h. p. automatic Atlas engine is to be added to the equipment of the Brunswick (Mo.) Brick & Tile Co.'s plant. The engine was purchased in Grant City, Mo.

The "Martin" **BRICK MACHINERY**

Modern **YARD SUPPLIES**

Soft-Mud or Stiff-Mud Processes

Get Our Plans

Dry or Wet Grinding Pans

Barrows and Trucks
Disintegrators

Clay Cars--Dryer Cars
Hoisting Drums

The Henry Martin Brick Machine Mfg. Co.

GET MARTIN PRICE LIST

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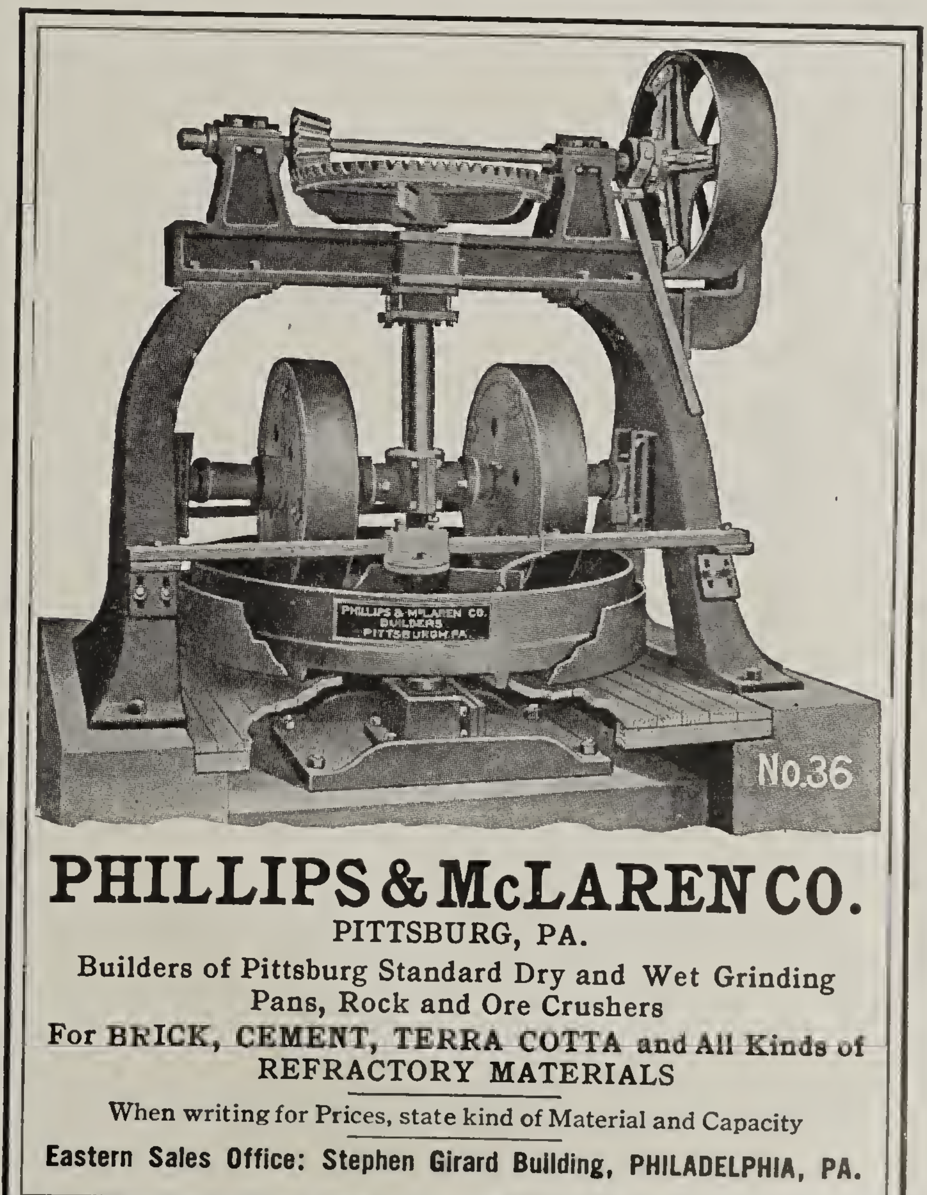
GET OUR BIG CATALOG

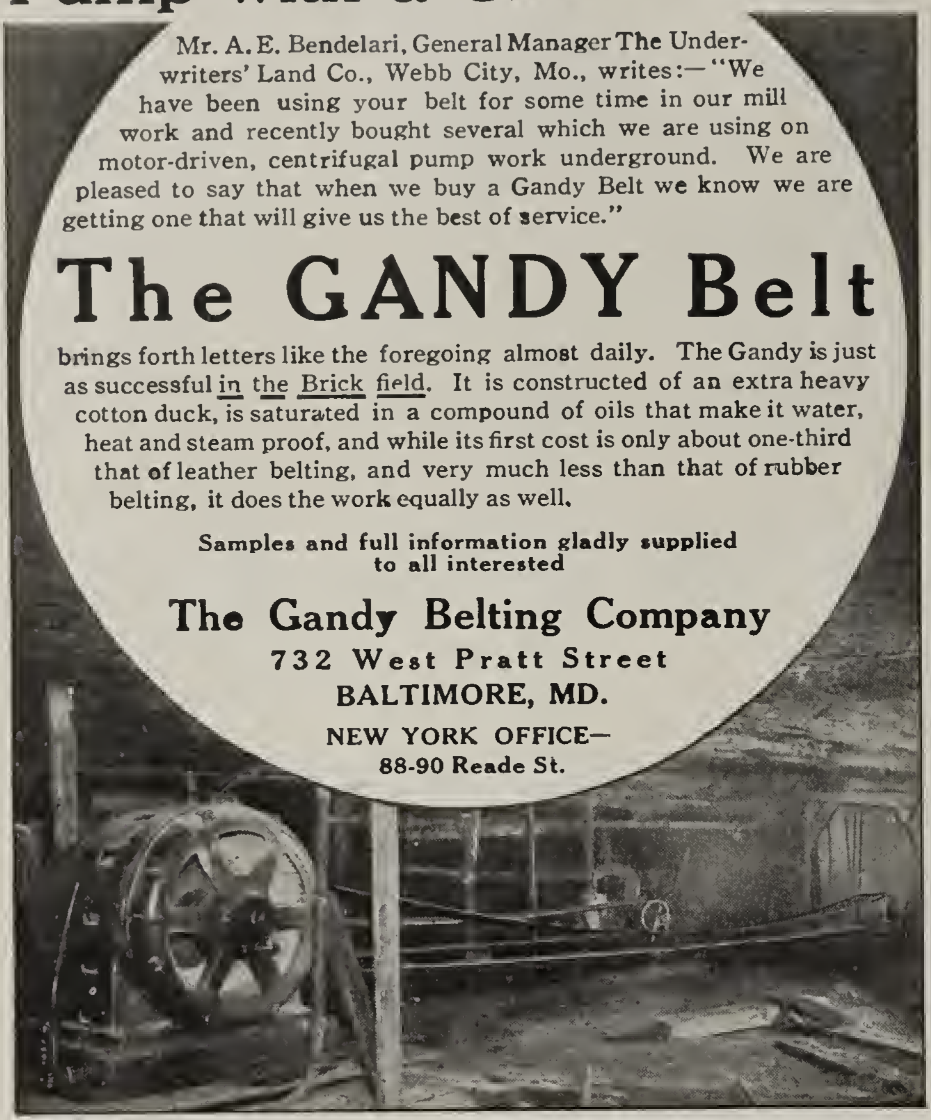


PHILLIPS & McLAREN CO.
PITTSBURG, PA.
Builders of Pittsburg Standard Dry and Wet Grinding Pans, Rock and Ore Crushers
For BRICK, CEMENT, TERRA COTTA and All Kinds of REFRACTORY MATERIALS

When writing for Prices, state kind of Material and Capacity

Eastern Sales Office: Stephen Girard Building, PHILADELPHIA, PA.

Operating an Underground Pump with a GANDY BELT



Mr. A. E. Bendelari, General Manager The Underwriters' Land Co., Webb City, Mo., writes:—"We have been using your belt for some time in our mill work and recently bought several which we are using on motor-driven, centrifugal pump work underground. We are pleased to say that when we buy a Gandy Belt we know we are getting one that will give us the best of service."

The GANDY Belt

brings forth letters like the foregoing almost daily. The Gandy is just as successful in the Brick field. It is constructed of an extra heavy cotton duck, is saturated in a compound of oils that make it water, heat and steam proof, and while its first cost is only about one-third that of leather belting, and very much less than that of rubber belting, it does the work equally as well.

Samples and full information gladly supplied to all interested

The Gandy Belting Company
732 West Pratt Street
BALTIMORE, MD.
NEW YORK OFFICE—
88-90 Reade St.

To Prevent Scum Appearing on Your Brick, Terra Cotta, Etc., Use

R. H. Precipitated Carbonate of Barytes

Literature on Application

Other High Grade Chemicals For Clay Industries

The Roessler & Hasslacher Chemical Company

100 Williams Street, New York

Sand-Lime Department

THE SAND LIME BRICK ASSOCIATION.

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A "Brick and Clay Record" correspondent recently complained that he wished we would give more space to sand-lime brick. We wrote him that we would be glad to devote the space if the trade would give us the news to fill it. Why manufacturers of sand-lime brick should be so secretive, fails of comprehension. They have a monthly bulletin, but a glance at the two last issues shows a deárth of news that is pitiable, considering the importance of the industry. "Brick and Clay Record," while saying one word for "The Sand-Lime Bulletin" and two for itself, wants to urge sand-lime men to realize the important of reading space devoted to their craft. See what the interchange of ideas among clay brick men is doing for their industry. Why not try a little give-and-take in sand lime? Send us the news—the new process—the new equipment and we will print it. Someone will follow you and you will be just as glad to see him "in print" as you were glad to see your own copy. Develop the news nose! Something happens every day, in your town, your plant, your machine room, that is worth while telling when you go home or to your club—why not give it a wider telling?

At Sydney, Nova Scotia, there is a plant manufacturing pressed building brick from slag. It is of special interest as it is the only plant in America, it is claimed, that uses this material for the purpose. The brick are made from basic blast furnace slag, a by-product of the Dominion Iron & Steel Company's blast furnaces. This slag is said to be admirably adapted for the purpose, containing as it does, about 50 per cent lime, 30 per cent silica and 13 per cent of alumina and ferric oxide. The molten slag is brought in contact with water and is thereby granulated and brought to a condition appearing like coarse sand. This water-granulated slag goes through a special preparation when a small percentage of cement is added, and is treated in a manner similar to the process of making sand-lime brick. The result is a pressed brick which is like an artificial stone.

D. H. Walker, Jr., has taken the position of manager of the Golden Gate Brick Co., replacing C. F. Pratt, who recently resigned. The office remains at 660 Market Street, San Francisco, Cal., and the company is doing a good business with a fine grade of sand-lime brick made at Antioch, Cal., as well as with several lines of clay products.

SECOND HAND MACHINERY

Brickmakers, if you have some misfit machines—machines that have grown too small for your plant—sell them through our Classified ads and take what you get and use it toward buying a larger and more modern machine. Classified ads are watched by bargain hunters.

Floor and Wall Tile

The past six months have seen a growing demand for bath-room tile, or rather for floor and wall tile of all kinds. Large quantities of this attractive material are manufactured in Trenton, N. J., and, as Trenton tile has a highly glazed surface, and a very reasonable price, it is being given consideration in new work of widely varying kinds. Tile makers, however, are also trembling for fear the tariff will be cut down, and that it will open up the sale of the cheap made foreign products, which it is impossible to make here under the same conditions. If the duty is lowered much, many plants will either have to quit business or reduce wages, in proportion.

The use of the fancy decorative tile for public buildings, schools, churches, colleges, gymnasiums and swimming pools is on the increase. This tile used to be made of white material, but now the color artist is in the saddle and beautiful effects are obtained in blue, pink, orange, lavender and a wealth of subtle shadings. The somber effects have been put aside and richer and more varied tones are being called for.

A few years ago it was impossible to turn out this decorative tile, commercially, but of late years, newer methods have made it possible. The many pictures, scenes and designs that are being produced in tile are beautiful, show individuality and stamp the personality of the designer.

The Penn Tile and Mantel Co., of Reading, Pa., have had some very good municipal contracts.

John H. Ingham, of 439 Land Title Building, Philadelphia, Pa., who handles the Moravian Tile and Mosaics, made by Henry Mercer, of Doylestown, Pa., states that an abundant supply of mechanical glazed tiles, of the oil cloth pattern, has always been on hand, but when the Moravian pottery was established several years ago, a new art product was created. Mr. Mercer invented and patented a process of making tiles, not of one clear hue as before, but with harmoniously blended hues as in fine stained glass. The designs were first conventional, but after studying collections in the British Museum and the ancient cathedrals and monasteries of Europe, he made the more elaborate designs, glazed or unglazed, square, oblong and hexagonal in shape.

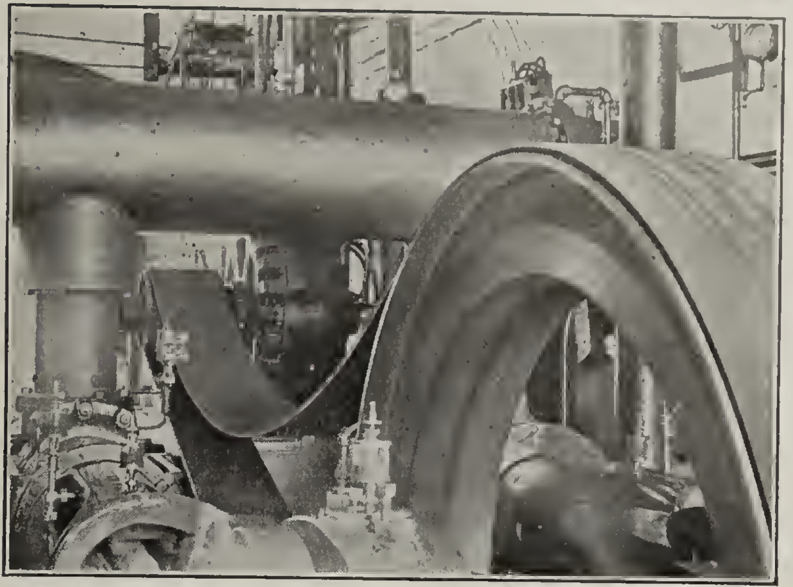
A new kind of mosaic is also made at this pottery, consisting of pieces of colored clay of various shapes formed into decorative design. About 400 of these mosaics shown against a background of plain red tiles, were laid in the Pennsylvania Capitol Building at Harrisburg. They represent the industries of the state, primitive implements, historical events, coats of arms and local fauna and flora. The mosaics are not injured by exposure.

CERAMIC SOCIETY WILL MEET IN NEW YORK.

Plans Four Day Session and Trips that Include New England Cities.

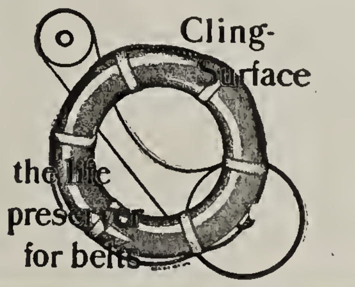
Meeting at nine o'clock in the forenoon of July 15th, at Fiske & Company's offices in New York City, the American Ceramic Society will begin its summer convention, which will include a visit to Hartford, Conn., and Worcester, Mass., Boston, Mass., and return to New York. The Hartford trip will include a visit to the Hartford Faience Company and to the Connecticut feldspar mines at South Glastonbury.

Thursday, the 17th will be spent in Worcester, inspecting the plants of the Norton Company, manufacturers of abrasive wheels. Starting for Boston in the afternoon, by trolley, if possible, the party will arrive in time to visit some of Boston's open air amusement parks, or follow their own devices as to passing the evening before a day of sight-seeing in the Hub of the Universe. Return will be by boat, (outside line), from Boston, to New York. The committee in charge is Ross C. Purdy, F. N. Hastings and J. Parker B. Fiske.



And yet they say intermittent loads require tight belts!

The belt shown above is in the John Bertram & Sons plant, Dundas, Ont. It is a typical example of Cling-Surface treated belts. Since May, 1910, when Cling-Surface treatment began, it has given absolutely no trouble. This belt now runs slack without slip even under full load, and when photographed was carrying 75 h. p. The sag is 24 in. With Cling-Surface treatment any similar belt may be run slack or easy.



Make the trial or ask for literature. We have already supplied many readers of Brick. Want references?

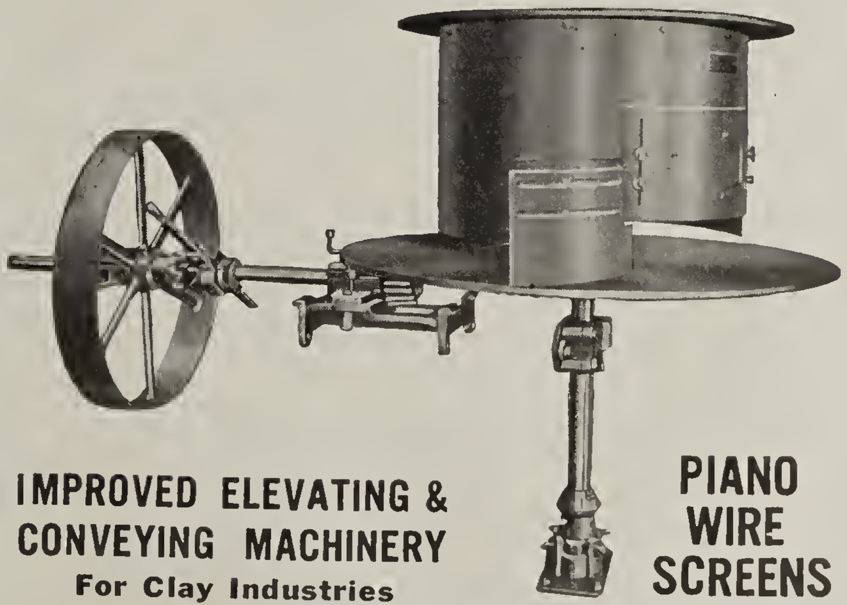
Cling-Surface Company
1029 Niagara St Buffalo N Y
New York Boston Chicago
Denver Atlanta Memphis etc
56

COLUMBUS

Automatic Feeder

INCREASES CAPACITY — IMPROVES PRODUCT

Let us explain!

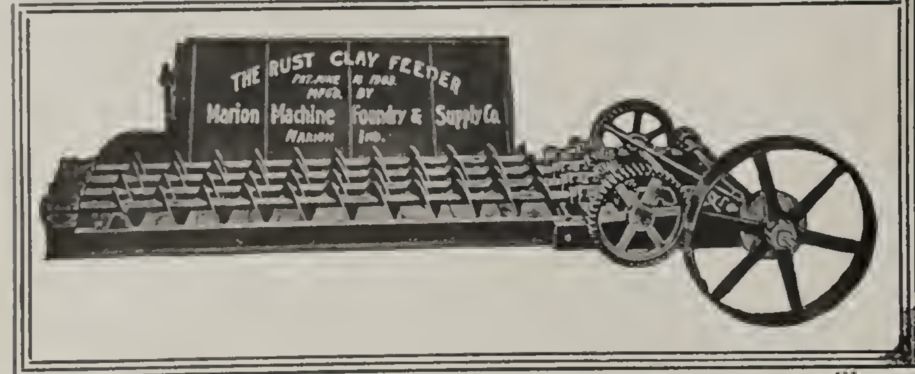


IMPROVED ELEVATING & CONVEYING MACHINERY
For Clay Industries

PIANO WIRE SCREENS

Send for Catalogues

The Ceramic Supply & Construction Co.,
Columbus, Ohio



The Rust
Clay Feeder

You have divorced yourself from hand methods in making brick—why not obtain a separation from hand methods in handling your clay in the pug mill?

Saves $500 a Year
in Labor Bills

The Rust Clay Feeder does away with hand labor and one machine will cut your labor bill just $500 every year it is employed.

It increases your capacity—it improves quality and in every way does better work and more work than human hands can do.

Shall we send you absolute proof of these statements? We have them.

Marion Machine, Foundry & Supply Co.
Box 395 - - - - MARION, IND.

SECOND REASON WHY
"NESTOR"
IS UNEXCELLED FOR
BRICK PLANT WORK

ALWAYS PLIABLE, FLEXIBLE,
NEVER BECOMES HARD
LIKE A BOARD

DO YOUR BELTS CONTAIN
THIS FEATURE?

The American Fabric Belting Co.
Cleveland, Ohio

With the Potter

The first pottery to be established in East Liverpool, Ohio, making sanitary fittings exclusively is known as the East Liverpool Sanitary Company. Its present output is five kilns a week and when the establishment gets into its stride, there will be a substantial increase. The processes employed are similar to the methods used in making other pottery ware, an average of fifty-five hours being required for the bisque ware and thirty-three hours for the glost ware. Between these firings the ware is brushed and dipped. The finished product is of good appearance and excellent quality.

West Virginia is rapidly increasing in importance as a pottery-producing State, according to the United States Geological Survey, its products of this class being valued at $3,365,166 in 1912, nearly 10 per cent of the total for the United States. This was an increase of $484,964 over the figures for 1911. The State now ranks third in the value of pottery produced, being exceeded by Ohio and New Jersey. West Virginia's product of chief value was white ware, of which it is the second largest producer in the country. The value of the white ware made in 1912 was $2,051,987, an increase of $131,693 over the figures for 1911. This product is made principally in Hancock County, opposite East Liverpool. The contemplated erection of two new plants in this county in the near future will add largely to its productive capacity and increase its importance as a pottery-producing center. Sanitary ware was second in value in West Virginia in 1912, being valued at $1,156,478, an increase of $341,879 compared with 1911.

Pottery products have been a little quiet in the eastern part of Pennsylvania, for the past few months, but are picking up some now. There is considerable apprehension in Trenton, N. J., as to the tariff, which, if lower, will have a disastrous effect on the main industry of that city. Pottery can be made in England, France, Germany, Austria and Italy for about half what it costs in Trenton and can be made in Japan for one-quarter of our cost. Japan today is an active competitor of this country's, and even paying the present duty, can in many cases undersell our potters. The Japs used to decorate their ware in fanciful designs, but have now adopted the American style of design and are turning out exactly the same lines.

The Cannonsburg (Pa.) Pottery Co. is now working its plant nine hours a day. John George, the general manager, says if a man cannot make a living working nine hours, there is something wrong, either with the man or the industry. The plant starts at seven and stops at five.

The Lesseer & Schwartz Co., of 34 Morris street, Jersey City, N. J., has built a one story pottery, 100x200 feet in size at Lafayette, N. J.

The Board of Trade of Reading, Pa., are taking up the matter of outside interests who want to establish a pottery there and put up a $40,000 plant.

Shortage of help in the western pottery districts continues, and the plants are not operating near to capacity. So many men have left the domestic branch to enter the sanitary part of the trade that the former is suffering badly, and the manufacturers are not able to produce their full capacity.

Definite announcement has been made that the General Porcelain Company of East Liverpool, Ohio, would move its seven plants to Parkersburg, W. Va., and consolidate them in one immense pottery. Four of the plants to be removed are located at East Liverpool, the others being at Trenton, N. J., Findlay, Ohio, and New Cumberland, West Va.

More than five hundred positions are open in the East Liverpool (Ohio) potteries, the managers having been forced to advertise in several pottery centers to secure help. Not in a decade has the pottery business been so good as it is at the present time and the shortage of help is felt keenly.

William R. Whitehead, treasurer of the Mercer pottery at Trenton, N. J., was stricken with apoplexy, June 10, and died within a few hours.

Hollow Block

A revision of the building code of St. Louis, Mo., is being planned by Building Commissioner J. M. McKelvey and, in an address delivered by him before the North St. Louis Business Men's Association, he said that the present building code is "too tight" and that it creates hardships for the contractor, the architect and the owners of small building lots. Mr. McKelvey said that the present code prohibits the use of hollow tile in certain kinds of buildings, but that he had made a test of the material and, as a result of the test, had authorized its installation in a seventeen story building.

"We have some of the largest brick and tile manufacturers in the United States," he said, "but they are shipping the hollow tile out of St. Louis because they cannot find a market for it here.

"I had samples of the tile examined at the municipal testing laboratory and found the material is good. I allowed it to be used in the construction of curtain walls in a downtown building.

"I took this action because I know the material is all right, and I will allow its use as long as I am Building Commissioner."

He added that it will require at least six months to revise the building code and that he felt a personal responsibility in its success or failure.

Concrete Requires Technical Skill.

Concrete construction "requires a high degree of technical skill" according to this writer in the Grand Rapids (Mich.) "Herald," under date of June 8, 1913:

"The need of a better understanding of reinforced concrete is being strikingly demonstrated by the number of apparent failures reported in the recent past, and in order that the dangers of incomplete requirements may be impressed upon the minds of those who prepare specifications, the American bureau of inspection and tests has issued a pamphlet bearing on the subject. Reference is made to the fact that there are two classes of reinforced concrete failures; first, failures during construction, and, second, gradual failures seldom manifest before two or three years.

"The failures of the first class are generally attributed to ignorance or inexperience on the part of owner, architect, or contractor; bad weather conditions sometimes aggravate these avoidable reasons. Investigations often reveal such recklessness in design that the designer is charged with part of the same. Design, however, is seldom the cause of a failure during construction. Removing the forms before the concrete is strong enough is the most common cause. Failures should be charged more generally to poor sand and aggregates. Owners should understand that concrete structures are something far different from buildings of wood or brick; they are engineering structures requiring a high degree of technical skill from the designing office to the issuance of the last certificate to the contractor."

The Fate company is manufacturing machinery for a large plant which is located in the penitentiary at Jackson, Mich., and operated by convict labor.

The company is one of the most enterprising manufacturing concerns in the United States and the Fate boys are live wires, on the job every minute of the time.

WATCH THE BUCYRUS DIG!

18B Bucyrus Shovel., 7-8 Yd. Dipper, Bloomfield Clay Co., Perth Amboy, N. J.

BUCYRUS REVOLVING SHOVELS

are especially adapted for brick-yard requirements. They may be mounted on car wheels or traction wheels. For plants of 125,000 bricks capacity or less. They can be operated by one man. Think the of saving in labor costs and troubles! They may be operated by steam or electricity.

BUCYRUS COMPANY
South Milwaukee, Wis.
New York Chicago Duluth Birmingham
R-30-1

"Let the DEWEY do Your Work"

The DEWEY takes steep grades (because it is chain-driven) and pulls greater loads than any of the standard types of equal size and weight.

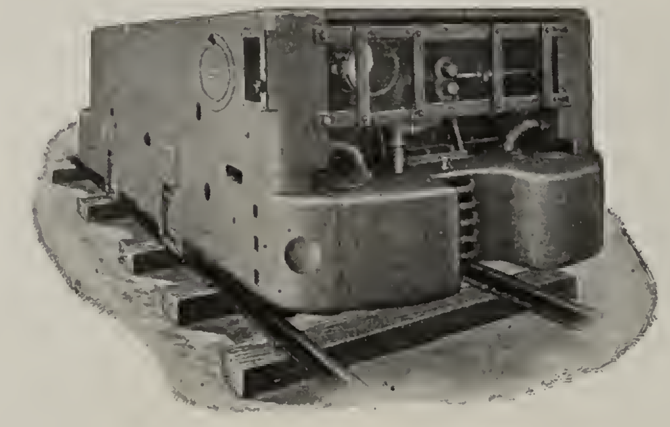
One clay plant is hauling 18 cu. yds. to a load over a trip a mile and a half long and up steep grade most of the way.

The DEWEY supplanted mules at this plant, and the proprietors say that the DEWEY not only does the work BETTER and hauls MORE clay, but does it CHEAPER.

Don't stick to antiquated methods. Get a DEWEY and let it do your work. A booklet telling you all about the DEWEY is yours for the asking if you mention "Brick and Clay Record."

DEWEY BROS., Goldsboro, N. C.

Gasoline Motors



Over 300 in Use—

Used by 150 Companies.
Used for Underground
or
Surface Haulage—
2½ to 16 Tons Weight.

Geo. D. Whitcomb Co.
Rochelle, Illinois

CLAY HAULAGE
Reduce costs of transportation by using a
Davenport Industrial Locomotive

Small Size—Reasonable Cost—Especially built for use of clay-products manufacturers', for hauling clay or shale from pits or mines to plant.

Cheaper Than Horse Transportation
and will reduce costs of delivering your material to your plant, thus increasing profits.

All About Modern Industrial Railways
Write us for particulars

Davenport Locomotive Works
Davenport, Iowa

BRANCH OFFICES: St. Louis: 654 Pierce Bldg.
Chicago: 12 and 14 So. Canal St. St. Paul, 1308 Pioneer-Press Bldg.
Seattle: 617 Western Ave. New York City, R. 2052 Grand Cen. Term. Bldg.
Canadian Representative: F. H. Hopkins & Co., Montreal, Que.

Freight Tariffs

Shippers of clay products are apt to pay excessive—that is, higher than necessary—rates, on account of improper classification. It is only necessary to glance at the various commodities to which the rate changes "Brick & Clay Record" is publishing each issue, apply, to see the liability of a mistake's being made. It is altogether too much to ask a "rate clerk" or some other minor official to define these fine distinctions in a way that will enable you to take advantage of what you are seeking—the lowest legal rate of freight from your plant to certain destinations. And. if you are depending upon the "rate clerk" or local freight agent to give you the advantage in a case of this kind, is it within the bounds of human possibility that he will favor you, as against the "Company" in whose employ he is?

Is it not fair to assume that he will accept your way of billing or describing the shipment, provided he knows it will not get him into trouble, rather than go out of his way to show you another way of billing that might save you some money—he knowing that your doing so might raise some controversy in which his loyalty to the carrier might be questioned? Read your tariff sheets carefully—see that the description of the goods you are making is the same as you would describe them—then think of the other names by which they called—hollow block is sometimes hollow tile, sometimes fire-proofing, sometimes hollow brick. Take it up with some general freight agent or district freight agent, if you know either personally. Otherwise, try some concern that makes a specialty of "Freight Saving"—you may learn something that will surprise you.

Since our last issue the following changes have gone into effect:

From Eastern Points.

From Eaglewood, Fords, Keasbeys, Maurer, Metuchen, Ostranders Siding, Perth Amboy, Perth Junction, Raritan Junction, Valentines and Webers, N. J., Brick (all kinds, except enameled), and fireproofing, made of clay, gypsum rock or cement, to Bath, Pa., $1.50 per net ton; to Bethlehem, Pa., $1.50 per net ton; to Coaldale and Hauto, Pa., $1.50 per net ton; to Lansford, Pa., $1.50 per net ton; to Nazareth, Sandts Eddy and Saylorsburg, Pa., $1.40 per net ton; to Tamaqua, Pa., $1.50 per net ton.

From Guth, Pa., Brick, to Inwood and Kingsbridge, N. Y., $2.30 per net ton; to Ossinning, N. Y., $2.70 per net ton; to Hackettstown, N. J., $1.50 per net ton.

From Lebanon, Pa., Brickbats, to Jersey City, N. J., $1.60 per net ton.

From Newburgh, N. Y., Brick, to Stroudsburg, Pa., 95 cents per net ton.

From Pocono Summit, Pa., Brick, to Belvidere, N. J., $1.20 per net ton; to Easton, Pa., $1.20 per net ton; to Long Island City, N. Y., $2.00 per net ton; to Phillipsburg, N. J., $1.20 per net ton.

From Port Reading and Woodbridge, N. J., Brick, to Geneva, N. Y., $2.00 per net ton; to Irvington, N. Y., $1.90 per net ton.

From Quakertown, Pa., Brickbats, to Jersey City N. J., $1.20 per net ton.

From Reading, Pa., Brickbats, to Jersey City, N. J., $1.50 per net ton.

From South Parkersburg, West Va., Clay, to Paden City, West Va., 75 cents per net ton.

From Middle West Points.

From Beecher, Chicago, Chicago Heights, Dolton, Steger and Grant Park, Ill., Common brick, to Ann Arbor, Mich., $1.35 per net ton; to Terre Haute, Ind., 95 cents per net ton; to Muncie, Ind., $1.15 per net ton; to Elwood, Ind., $1.15 per net ton.

From Chicago, Ill., and common points, Brick (except bath and enamel), fire clay and common building tile, to Sante Fe, New Mex., 45 cents per 100 lbs.

From Minneapolis, St. Paul, Camden Place, Minnesota Transfer and North St. Paul, Minn., Brick (including hollow, clay, building and paving), to New Richmond, Superior and Gordon, Wis., and to Duluth and Moose Lake, Minn., 6½c per 100 lbs.

From Mississippi river common points, Brick (except bath and enamel), fire clay and common building tile, to Santa Fe, New Mex., 40c per 100 lbs.

From Peoria, Ill., and common points, Brick (except bath and enamel), fire clay and common building tile, to Santa Fe, New Mex., 42c per 100 lbs.

From Red Wing, Minn., Sewer pipe, flue lining and wall coping, to Fairchild, Wis., 11c per 100 lbs.

From Rock Hill, Mo., Brick to Fremont, Neb., 10½c per 100 lbs.

From Western Points.

From Altoona, Brickton, Buffalo, Buffville, Caney, Coffeyville, Elk City, Fort Scott and Fredonia, Kas., Brick, to Fremont, Neb., 10½c per 100 lbs.

From Independence, Iola, Le Roy, Liberal, Mapleton and Mound City, Kas., Brick, to Fremont, Neb., 10½c per 100 lbs.

From Nevada, Mo.; Nowata, Okla.; Peru and Pittsburg, Kas., Brick, to Fremont, Neb. 10½c per 100 lbs.

The Interstate Commerce Commission has denied the Illinois Central Railroad authority to establish a rate of $2.00 per net ton, minimum carloads of 60,000 lbs., on paving bricks from Murphysboro, Ill., to Louisville, Ky., without observing the long and short haul provision.

Drain Tile

Modern clay manufacturers are no longer satisfied with perishable construction in their plants. They feel keenly that their industry has been wasteful and they are setting about applying the remedy. They are mining their clays with steam shovels, transporting them to the grinding machinery by electricity; operating their machinery throughout by electricity; drying their product by waste heat; burning their ware in continuous kilns and are handling their product throughout with as little of the direct touch of human hands as they find possible.

Several Iowa plants are electrically driven but mostly plants of small capacity. One large plant at Boone that of the Boone Brick, Tile & Paving Co., has recently discontinued the use of steam and uses electricity for driving all its machinery.

At Mason City, the Mason City Brick & Tile Co., operating four large tile plants, has recently installed electrically driven grinding machinery in a central clay preparation plant, which will supply clay for all four plants. This is an economic move which will not only save labor but insure a regular supply of clay and a more even grade of product, which will result in added capacity for each plant.

Concrete Building Collapse is Fatal.

One man was killed, two others buried in debris and five more seriously injured today in the collapse of the four-story business block in course of construction here. Firemen and volunteers began propping tottering walls to enable them to search the ruins for the missing men. The building is of concrete and wood construction. The concrete support of floor beams gave way, throwing all but the walls into the basement.—*Vancouver, B. C., Daily Press,* June 14, 1913.

THE GREATEST ECONOMY

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The Martinsburg Brick Wagon

is the last word in up-to-date delivery equipment. Not an experiment but proven by the most thorough tests under hardest conditions.

Slides out the load in one minute and doesn't chip a brick. No complicated mechanism. Capacity 1400 to 2000.

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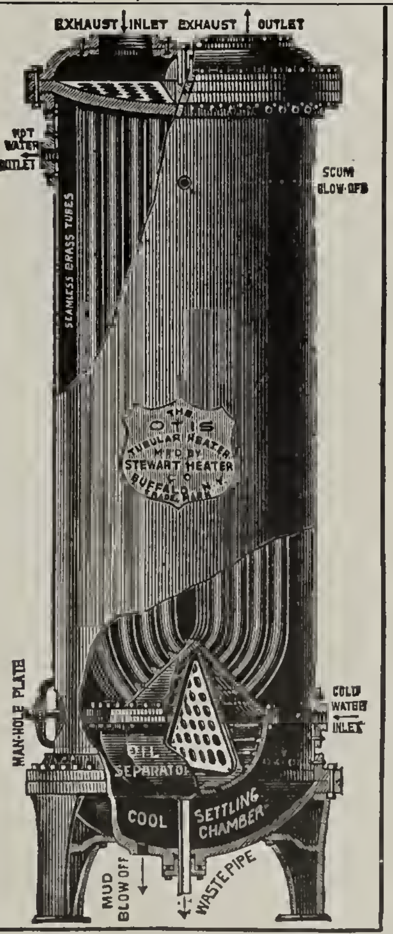

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Tubular Feed Water Heater, Oil Separator and Purifier

is not an experiment but a tried and trusted appliance that the makers are not afraid to

GUARANTEE

To heat the feed water to the *boiling point* (210 to 212 degrees) with the exhaust steam without causing any back pressure, *also to extract the oil from the exhaust,* so that the exhaust steam after being passed through the heater can be used for other heating purposes, and the water of condensation for the heating system be returned to the boiler without the. *additonal expense* of an *eliminator.*

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The investment demanded for the best possible car for your plant requires careful investigation.

The Industrial Car will be your first choice and the one eventually purchased. The manufacture of dryer cars is only a small part of our line. We have a car for every need.

Write for our catalog and let us submit an estimate for the coming season's requirements.

Electric Locomotive & Car Co.
Successors to The Industrial Car Co. and The Cleveland Car Co.
West Park, Ohio

Monthly Tablet

Ancient Order of Chaldeans

Issued Under Authority of
The Supreme Temple
Chicago

Officers of the Supreme Temple

Supreme Venerable Nebo	W. D. GATES
Supreme Learned Fo	WM. SCHLAKE
Supreme Exalted Philosopher	F. W. LUCKE
Supreme Keeper of Tablets	IVERSON C. WELLS
Supreme Keeper of Shekels	L. D. BINYON
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Supreme Council of High Priests—Charles B. VerNooy, Supreme High Priest, Ka., Louis D. Binyon, H. G. Bowstead, E. K. Cormack, R. M. Combs, James A. Hogan, Herman L. Matz, C. L. Rorick, H. H. Rosenberg, William C. Varney, Iverson C. Wells and F. G. White.

(NOTE: Address all communications to Iverson C. Wells, Supreme Keeper of Tablets, 445 Plymouth Court, Chicago)

Because of the busy condition of the clay plants the Supreme Priests of the Ancient Order of Chaldeans have decided not to take any active steps in furthering the organization work of the Order until fall.

Members, who took the initiation at the installation of Chicago Temple No. 1 during the Clay Show and conventions last March, are not to infer from this that interest in the new organization is to lag. On the other hand the supreme officers are planning to resume active work towards forming local temples in every community where there are sufficient members or candidates for initiation as soon as the time is more propitious.

Supreme Keeper of the Tablets Wells, who wrote the original ritual for the Chaldeans, is at work on revising the same and expects to greatly improve the work by condensing some of the scenes and adding others that will prove of more interest. The ritual was prepared at rather short notice and many errors and discrepancies crept in that otherwise would not had more time been given to the work.

As soon as the ritual is revised it will be supplied to local temples as same are formed in various sections of the country.

There is some discussion of holding a Chaldean picnic sometime during the heated period and making the feature an annual event. It is proposed to hold the picnic this year at Cedar Lake, Ind., which is the most central point of a desirable nature for the greater part of the membership.

If the picnic or excursion is a success it is further proposed that picnics be held each year in various sections of the country, so that the entire membership may enjoy the outings.

No definite plans have been laid and it is possible that the idea may have to be postponed until next summer.

Mr. Armstrong, the provisional secretary of Ontario, Canada, has placed an order with The J. D. Fate Co., of Plymouth, for the necessary machinery for the operation of the most complete and up-to-date plant for the manufacture of brick, hollow fireproofing and roofing tile in the Canadian empire. After the plant is constructed they will manufacture the necessary material for seventy-two public institutions.

Sewer Pipe

City Engineer, B. E. Briggs, of Erie, Pa., reporting on the causes contributing to breaks and faults in sewer construction in that city, says that the breaks are found almost exclusively in 12 in. to 18 in. vitrified pipe sewers laid in wet sand under street car tracks, where the fill over the pipe runs from 11 ft. to 15 ft. and that this depth, in his opinion, is too great for the quality of pipe that was laid in Erie prior to 25 years ago. The breaks are not confined, however, to the oldest pipe, as several bad ones have occurred in the best quality of vitrified pipe laid prior to 1896. These breaks are sometimes caused by a large quantity of earth falling from the top of a cavity which reaches nearly to the surface. The weight of the falling earth crushes the pipe, which is further liable to breakage if the earth was washed out under the pipe as well. Mr. Briggs, writing to the "Municipal Journal" attributes these breaks also to the fact that the joints were imperfectly cemented, admitting a large quantity of ground water, which gradually carries away the fine sand and dissolved clay until a cavity is formed above the pipe. The jar of the cars passing over these cavities causes the earth above to drop on to the pipe and in turn be washed away, until finally a considerable mass falling from the top of the cavity, when this attains considerable height, delivers a blow sufficient to crush the pipe. If, on the other hand, the earth is washed from under the pipe, the pipes settle into the hole, in which case they are seldom broken, but the repairing of the sewer is made difficult on account of the soft wet earth below the grade of the sewer,

It seems to have been the practice in Erie prior to 1896 to lay many sewers to an excessive depth and in the case of pipe sewers to close only the upper half of each joint with oakum and cement, leaving the lower half open. This practice has cost the city many thousands of dollars, and the end of repairing is not yet in sight.

A novel method of dealing with ground frozen to a depth of about 4 feet was adopted at West Liberty, Iowa, says "Contract Record," During the winter of 1911 and 1912 the ground was so hard that it resisted all efforts of the trenching machine to break it. Finally, lime was placed, covering the width of trench to be opened, and was broken up into small pieces and covered with straw, hay or manure. Water poured upon it so as to slake the lime thoroughly. The covering retained the heat, which with the hot water penetrated the frozen ground sufficiently to enable the trenching machine to make headway. On another job a covering of old boards with a steam jet was found to get over the difficulty.

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¶ Do you ever stop to consider that the paving brick manufacturers are enjoying their greatest prosperity *right now?*

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SAN FRANCISCO OFFICE: 347 Monadnock Bldg.

Trade Review

New York.

The first half of the year has closed and a third of the building season in the East ends with twelve more barge loads shipped into this market than had been shipped up to June 20 of last year and with sixty more barge loads sold in the same period this year than in a corresponding time in 1912. Prices have been, as a rule, from one to three eights higher than last year, but still the manufacturers say they have not had a good season. There are still about a hundred million brick up the river in sheds representing a hang-over from last year that may be worked off between now and the fifteenth of July or the first of August when the 1913 output of brick begins to arrive.

During the six months just closed brick manufacturers have passed through an unusually nervous strain. They entered the year fearful of the decision in the ex-parte proceedings in the case of the Greater New York Brick Company. They heard the decision and have had to stand up to the bar for further examination as to their guilt or innocence in organizing a "brick trust." The Hudson river brick manufacturers at the same time not only passed through a sick market, nauseated, perhaps, by over-speculation and manipulation, but they had to meet competition from two states, New Jersey and Connecticut. To make matters worse, they came into the year with more brick on their hands than they had figured on and with companies competing from two other states, this volume did not diminish as rapidly as many producers would have liked to have seen. On top of that, New York City dropped almost one-third behind last year's building figures for new construction and the delay in signing the subway contracts deferred the consumption of brick that otherwise would have helped to take care of the up-river stocks. Then came the tariff legislation, the unsettling of the money and securities market, the North river floods and last, the most bitter of the bitter pills the year has brought in with it, the labor shortage that has crippled them in turning out their 1913 products.

But in spite of all this, prices have held higher than they did last year and the brick industry looms up with more promise for sound business conditions than it has had, in approaching a second half year, in many generations. The reasons for this belief are, in short, as follows:

We have had a full year (the three political pots began to boil last year at about this time) of doubt and uncertainty regarding future of business. The events of the last six months show that business generally has liberally discounted this unsettling factor and all it demands today is speedy action on the tariff bills now before Congress and to get the agony over with as soon as possible so that adjustments to the new conditions may be made and placidity once more reign.

The second reason is found in the fact that much rumored break in building material prices, due on or about the first of last April, did not materialize. But when, instead of crumbling, prices were actually stiffened, investors not only saw at once that they would gain little by waiting, but that instead of being caught overloaded, the discounting process that had been given so much publicity in Wall street, had been carried even into the management of brick plants and there was not anything like the expected burden that was to have brought panic prices. True, brick moved slowly for a time, and a slight, temporary shading, which has since been amply justified as a business tactic by no less a company than the U. S. Steel Company, was employed to bring out new business. Some of it would not be coaxed, but a whole lot more came out and here is where the stability of the market in the beginning of the second half year is to be found.

President Wilson says we can have the finished tariff by the first of August, maybe sooner. Eastern manufacturers want it just as soon as they can get it. They see a large market looming ahead, but they can also see that a large market is like a fish uncaught, unless the financial puddle is free from agitation

The promised market is not in Manhattan, nor in central Brooklyn nor in congested Bronx, but in the Morris race track section, just on the outskirts of built-up Bronx where 3,048 lots were recently sold in ten days. It costs money to hold property idle in New York and as commercial Manhattan now requires too large working capital for the average speculative builder to dabble in the Morris Park race track is liable to witness the start of a great building boom within the ensuing six months, and with brick at their present level, the field is exceptionally good for the Hudson river manufacturers.

Looking backward over the last six months the brick manufacturers of the entire east have little excuse for shaking angry fists at luck, but a whole lot more cause for letting their right hands grip their left hands and congratulating themselves that the first half of the year has treated them with the consideration it has, in view of the fact that it ends with a number that usually presages a hoodoo.

Kentucky.

The building situation in Louisville seems to be showing a little more life than it did a fortnight since and the architects are calling for bids on work that has been on their boards for some time and which, it was feared, would be postponed for several months. The greater part of the work calls for brick construction and the manufacturers of common brick are finding that the demand is absorbing their output without much difficulty. The crop situation in Kentucky is better than was expected and the general business outlook has partaken of the change for the better. There is a feeling of optimism very evident in clayworking circles and July promises to be a profitable month for brick, hollow-tile and terra cotta manufacturers.

California.

Building is hardly as active as was expected, the record for last month showing considerable decline not only in San Francisco but in most other Coast cities. While the number of important jobs figured is steadily increasing, there is considerable delay in the letting of contracts, which may be attributed to the tightness of money. Moreover, concrete is being used for a large proportion of the work all along the Coast, especially in San Francisco and Los Angeles, notwithstanding the convincing demonstration of the unsatisfactory results usually attending its use in large buildings. It is said in some quarters that this is due to the financial affiliations of the cement interests, which in various ways exert an influence adverse to brick. For all that, the movement of common brick is larger than it was a few months ago, and prices are firmly held in San Francisco, at $7.50 per M. Many hotel and apartment buildings of brick construction are planned, and if they are built, in addition to the municipal work in prospect, a large movement

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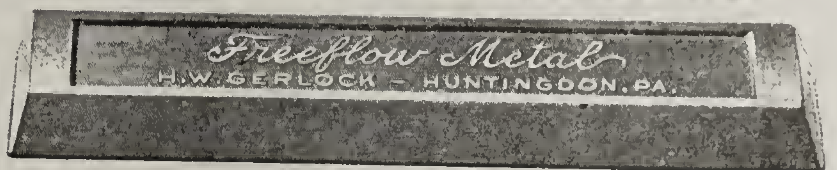

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Gerlock's Freeflow Metal is highly anti-friction—flows freely—has practically no shrinkage—stands heavy pressure and high speed, and because of these exceptional qualities is especially adapted to the clay plant where the demand is so severe on babbitt.

Runs Smooth to the Thinness of Paper

Freeflow Metal has no equal for durability and strength. It will retain its smooth-running qualities month after month and even until it is worn down to the thinness of paper.

It is made from absolutely NEW materials and the Gerlock process of manufacture insures uniformity at ALL times.

Order at Our Risk—You Take No Chances

We have such confidence in Gerlock's Freeflow Metal that we ask you to order a box at our risk. Use it and if it is not absolutely satisfactory send it back—we will pay the freight both ways. Will ANY OTHER babbitt manufacturer make you this same liberal offer—CAN he make it? If he can't or won't has he confidence in what he manufactures?

We use the same care in the manufacture of Gerlock's Freeflow Babbitt Metal as we do in all the Gerlock Products for the Clay plant—Gerlock's Steel Drier Cars, Gerlock's Steel Moulds, Gerlock's Kiln Bands, Gerlock's Kiln Buckstays and Rods, Gerlock's Dumping Tables.

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Split Wood Pulley

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Unequaled in quality of material, workmanship and finish, it is fully guaranteed for any line or counter shaft service in which regular leather belts are used, and is known as the "balanced pulley" because of the care and study given to produce absolute accuracy in manufacture.

Interchangeable bushings enable you to fit any pulley to the shaft. They give 100 per cent clamping surface.

Dodge wood pulleys are guaranteed to transmit from 25 per cent to 60 per cent more power with the same belt than any iron pulley made, with equal tension of belt.

Investigate this old reliable pulley and you will probably find it saving more money in the average plant than any one piece of transmission machinery.

"From Log to Line Shaft" gives a history of "Independence" and is a treatise on pulley use and manufacture. We'd like immensely to send you a copy.

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will undoubtedly take place during the late summer and fall.

The city of San Diego, Cal., has just taken figures on 200,000 hard-burned common brick for use in the new sewer project.

C. B. Danforth, a recent arrival in San Diego, has acquired an interest in the Hieatt Brick Co., of that city.

C. H. Weed, who is starting a new townsite near Porterville, Cal., proposes to put in a brick plant at an expenditure of about $50,000.

H. J. Ridle, representing the Peterson-Kartschoke Brick Co., of San Jose, recently made a visit to the vicinity of Santa Maris, Cal., to locate a site for a brick plant, the cheap supply of fuel oil in that district being an inducement for the establishment of such an industry.

The Coos Bay Brick & Clay Manufacturing Co. has been incorporated at Marshfield, Ore., with a capital stock of $30,000, J. S. Walling, of Portland, being the leader of the enterprise.

The plant of the Newberg, Ore., Brick Co. was destroyed by fire on the night of June 11, with a loss of about $75,000.

The new lines of rough-face brick turned out by the Vallejo Brick & Tile Co. are establishing a strong hold in this market, being used in several important jobs in preference to pressed brick.

The Pratt Building Material Co., Examiner building, San Francisco, is now representing the Sacramento Clay Products Co., formerly known as the Silica Brick Co., which recently built a large plant at Sacramento, Cal. This company is making a specialty of pressed brick, but also has a large output of matte surface facing brick, partition tile and fire brick. Mr. Pratt reports several good jobs at Sacramento, in addition to a large building at O'Farrell and Powell streets, San Francisco, and several smaller jobs through the country. In addition to these products Mr. Pratt is handling a general line of building materials.

The La Bolsa Tile Co., Huntington Beach, Cal., started up for the season about the middle of June, and will run till late in the fall. A new tile machine is being put in operation.

The Long Beach Unit Brick & Tile Co. has been incorporated at Long Beach, Cal., with a capital stock of $50,000, by J. M. Emery, W. T. Harper, G. H. White, T. S. Benson and Allen Hoar. The company is said to be a subsidiary of the American Roofing Tile Co.

Columbus, Ohio.

Steadiness chraracterizes the market for face and common building brick in all parts of the Buckeye State. Building operations are still very active and the result is a good demand for all kinds. The plants in the Hocking Valley and other parts of the state are being operated with as nearly a full force of men as can be secured and, generally speaking, the industry is prosperous.

One of the tendencies of the brick business in Ohio is the desire to buy lower priced face-brick. According to the managers of several of the larger factories of the state, customers in their immediate neighborhoods are demanding cheaper brick, and as a result some of the factories are cheapening their products. This bending to an economic exigency is deplored by every man who has the interest of facing brick at heart. It would seem that since face-brick was so inconsiderable an item in general construction cost, that a sufficiently high price could be maintained to assure good quality.

A large percentage of the better class of face-brick manufactured in Ohio are shipped outside of the state. The West especially is in the market for a high quality brick and the same is true of the South. Florida is becoming an especially good market.

The East Ohio Pipe Co., of Toronto, Ohio, is doubling the capacity of its plant at Irondale.

The Pacific Northwest.

Mr. Geo. W. Daniels, who organized the Toronto Clay Products Company last winter, has dropped his intention of building at Little Falls, Wash. He has, however, selected another location, and has now incorporated the Winlock Brick & Tile Company, of Winlock, Wash., with a capitalization of $30,000. Mr. J. A. Veness, the lumberman and capitalist of Winlock is president of the company, and Mr. A. C. Shives, secretary and treasurer. Mr.

"Pioneer Machinery is simply the best,
And used in clay Products, it stands Every test;
Durable, high-class, efficient and true,
It does for its users what others Can't Do

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CLAY MACHINERY
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REFERENCES:

Wm. E. Dee Clay Mfg. Co., Mecca, Ind.
National Drain Tile Co., Terre Haute, Ind.
Whitehall Sewer Pipe Co., White Hall, Ill.
Lehigh Clay Product Co., Lehigh, Iowa.
The Denny-Renton Co., Seattle, Wash.
The Gladding-McBean Co., San Francisco, Cal.
The Pacific Clay Products Co., Los Angeles, Cal.
W. S. Dickey Clay Mfg. Co., Kansas City, Mo.
Texarkana Pipe Co., Texarkana, Tex.
San Antonio S. P. Co., San Antonio, Tex.
Henry Stevens Sons & Co., Macon, Ga.
Pomona Terra Cotta Co., Pomona, N. C.
Shawmut Clay Co., Shawmut, Pa.
Robinson Graves S. P. Co., Uhrichsville, O.
Dominion Sewer Pipe Co., Swansea, Ont., Can.
The Hamilton & Toronto Sewer Pipe Co., Toronto, Can.
British Columbia Clay Products Co., Vancouver, B. C.

Send for Catalog No. 29

The-Taplin-Rice-Clerkin-Co.

The Clay Machinery Folks of the United States and Akron, O.

Daniels will be the manager of the company. The company has placed it's order for machinery with the J. D. Fate Company, of Plymouth, Ohio, and will install a Klose kiln. The company will make drain and partition tile, and later face brick.

Hardin-Richmond Company, general contractors with offices at Portland, have incorporated their company and will engage in the manufacturing of clay products.

Mr. J. E. Walling formerly with the Standard Brick & Tile Company, of Portland, has moved to Marschfield, and organized a company under the name of the Coos Bay Brick and Clay Manufacturing Company. Their capital will be $30,000. This company has bought a second-hand soft-mud outfit from Pocatello, Idaho, and will be in operation shortly.

The plant of the Newberg Brick & Tile Company ,of Newberg,. Ore., has been completely destroyed by fire. The loss is estimated at $70,000 with $5,000 insurance. In as much as the plant was old, and the location not very favorable it is not likely that it will be rebuilt.

Abrahamson Brick Company, of Seattle, Wash., will engage in the manufacturing of drain tile. The demand for brick in the Seattle market is not very great at present, and in order to keep their plant running, they will add the drain tile feature to their business. Mr. J. M. Brewster, the manager, has secured some large orders for drain tile in Vancouver, B. C.

The Geijsbeek Engineering Company, of Portland has prepared plans for a new hollow ware plant for the Clayburn Company, of Clayburn, B. C. They have also installed a new conveying system for waste clay at the plant of the Standard Brick & Tile Comany, of Portland.

Field Brothers, brick manufacturers of Monroe, Ore., have dissolved their partnership, and J. E. Field has sold his interest in the concern to Geo. Marx. W. E. Field, who acted as manager of the partnership will retain his interest and is planning to improve the plant at Monroe.

Maryland and Delaware.

Brick dealers in Maryland and Delaware, and indeed throughout the East are inclined to assume a waiting attitude, in view of the political situation as it is now understood. While there are but few who fear the outcome of the activities of Congress, either in the tariff revision or the currency experimenting, nevertheless they are in sympathy with the other business interests of the United States in preferring to await the outcome of the national legislation before undertaking any ventures of great importance.

The situation, particularly in Maryland and Delaware, was aptly expressed the other day by Warren P. Griffiss, general manager of the Baltimore Brick Co., of Baltimore, Md. Mr. Griffiss is a keen student of business conditions, not only in the brick field, on which he is an authority, but in wider business interests as well.

"We of the brick trade certainly have no apprehensions for this year's business," he said. "Of course national surgery which touches vital spots naturally stirs up the patient, and he is not likely to be planning any great enterprises during the operation. Therefore, the situation in the brick trade and in every other trade at present, is perfectly natural. We are waiting until it is over, and then we will be ready to go ahead, under the most favorable auspices, and I believe we will do a business that will surprise old timers."

While not old, in any sense of the word, Mr. Griffiss has been in the brick business quite long enough to be considered somewhat of an oldtimer himself. And he was frank enough to admit that he expected to be surprised himself at the volume of business, even though he himself made the prediction.

Deliveries in the brick trade in Maryland and its sister state at this time of the year, compared with 1912, are a little slow. It must be remembered, however, that in the first few months of 1912, Maryland experienced some of the coldest weather that it had ever known. Particularly was it remarkable for the length of time which it remained close to the zero mark on the thermometer. Naturally this tied up things considerably, and when the thaw did come, it came like an avalanche, with brick men busier than the proverbial one-armed paper hanger.

This year conditions in these two states were just

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about as different as they could be. There was practically no winter at all; for the first time in years the rivers and other tributaries of the Chesapeake Bay were open all the season, and there was no snow. Consequently the rush of business which made the account books loom so large in 1912 was not apparent, but in the ultimate analysis, it will be found that 1913 will be quite up to the standard of its predecessor, even if it was a year in which a new national administration was born, and in which the tariff juggling began all over again.

Philadelphia, Pa.

The sale of common brick has been very good for the first half year and building operations, while not quite up to the expectations of the earlier months, have been mainly in fireproof materials. The suburbs are building up very rapidly and long rows of brick houses are going up, it would seem, over night. Philadelphia is noted for its brick houses and hundreds are built at one operation.

The Hillside Brick Co., near Ogontz, owned by James Romic, has a capacity of 760,000 common brick per day. It is practically a new plant and is one of the most up-to-date in this locality. It has been equipped with Martin machinery.

Dr. William P. Wilson, of the Commercial Museum, says that the opening of the Panama Canal will increase the demand for brick and other clay products from all of the South American countries as well as stimulate the trade in the Gulf ports and the territory in our own Southern states that is contiguous to them.

The plant of the Milton (Pa.) Brick Co. is being finished and will start operations the early part of this month. This is a new concern, with a capital of $150,000. W. Irving Kimball is president; Louis W. King, secretary and Thomas M. Wilson, general manager.

Hugh Hatch, of Camden, N. J., has been working his force overtime to keep up with the demand for commons.

The J. Walter Miller Co., of Bordentown, N. J., is running its plant to capacity and is still behind its orders.

The Perkiomen Brick Co., of Montgomery Co., Pa., has a suit against the Montello Brick Co., of Reading, Pa., as to a lease on the plant of the first mentioned company, at Oaks, Pa.

Robert and John Hartley, of Phillipsburg, Pa., have started the Hartley Brick Co., to make 40,000 red and white building brick a day, at their plant in Cambria county.

There has been an increasing demand for face-brick and for enameled brick, the better class of houses requiring more and more pattern-work in the brick facades. Rough-face face brick is gaining in popularity over the so-called "conventional" smooth brick and enameled brick is being used to a greater extent than ever before, especially in store property. The Sayre & Fisher Co., of Sayreville, N. J., have obtained some very good orders recently, one being for a million and a half brick, face, enamel and hollow, for the High School.

The Darlington (Pa.) Brick Co. has had a very busy six months, a satisfactory volume of business having been obtained by their various representatives in New York City, Syracuse, Rochester and Buffalo, N. Y., Providence, R. I., Boston, Mass., Washington, D. C., and in Chicago.

In the paving brick field, reports are still more optimistic. The Mack Manufacturing Co., offices in the Land Title Building, Philadelphia, has had orders from two hundred cities, aggregating fifteen million paving brick. This company controls the Hamburg Vitrified Brick Co., and the Pine Grove Vitrified Brick Co. A new paving brick plant will be built at Lock Haven, Pa., by the Hope Shale Brick Co., which will have a capacity of 45,000,000 brick a year. The C. W. Raymond Co., of Dayton, Ohio, will have charge of its erection.

A Bradford (Pa.) brick company has taken over the Standard Shale Brick Co., of Youngsville, Pa. This makes the ninth plant operated by this one concern.

The call for sewer pipe has been steady and of fair volume. The manufacturers are now selling in car lots direct to consumers and have cut out, to a great extent, the retail dealer. This, with the fact that the plants have increased capacities and installed modern labor-saving machinery, has made the price of vitrified clay sewer pipe very moderate, a situation that has aided its popularity to the detriment of cement. J. Perry Lukens, representing the American Sewer Pipe Co., has booked some very good orders for future delivery. The Clearfield (Pa.) Sewer Pipe Co. has been incorporated to make sewer pipe, drain tile and fire-brick.

The Clymer Brick & Fireclay Co., of Clymer, Pa., makes a specialty of radial chimney brick, and has enjoyed a strong demand for this material. Thirty small brick houses have been built in the vicinity of the plant, for the purpose of housing the company's employees. The main office is at Indiana, Pa.

E. E. Nickson, the Philadelphia representative of the National Fireproofing Co., has received some good orders both in and in the vicinity of Philadelphia, the addition to the Bellevue-Stratford Hotel having taken over $100,000 worth of this material.

There is probably more fire brick made and used in Pennsylvania than in any other state in the Union. Last year the business was rather quiet, as the steel mills were not overcrowded with work. This condition was changed late last fall, and ever since, the demand for refractory material has been very strong. The steel, coke, gas and other plants using fire-clay and silica brick have been rushed with orders and furnaces have been built and relined to an extent that has put the manufacturers of refractories on their mettle to keep abreast of the demand.

Rumors to the contrary notwithstanding, the general business conditions are good in Philadelphia and the territory tributary to it. Real-estate investment and improvement circles do not seem to be worried over the tariff or financial legislation and the first few months of the Democratic administration have passed without any harmful effect upon the interests that are dependent upon the building trades for an outlet for their products. Everything points to a phenomenally busy and prosperous year.

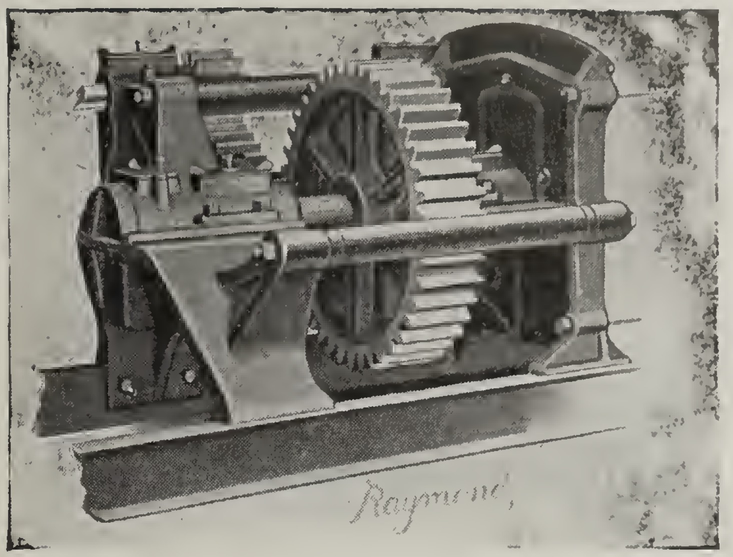
Michigan.

Brick manufacturers in Detroit and the state report a heavy demand for materials and the indications are that the business of 1913 will exceed the record of 1912. It is coming in heavier volume right now than at this time last year and the probabilities are that it will continue strong. Contractors report that the demand for brick houses this season is far ahead of the demand for last year and in the downtown district of Detroit numerous office buildings are being constructed of brick. The Dime Savings Bank Co., has recently completed a 22-story brick business block on one of the principal downtown corners and the Statler Hotel Co., of Buffalo, N. Y., and Cleveland, Ohio, has practically completed plans for the construction of a 700-room hotel which will go up in Detroit this summer or fall. Another big hotel will be built in the downtown district and the plans for it call for brick. The Ford Motor Car Co., has recently let contracts for the erection of a large addition to its plant and this addition will be of brick. The Edison Illuminating Company has completed an addition to its big plant in Delray and this was of brick. These few instances have been given to prove the statement that brick is entering into building operations this year in a manner that is in excess of past records. Brick plants in all parts of the state have been running strong for several months and they probably will continue to run to capacity into the winter, if they stop then.

Brick manufacturers have had some difficulty with the railroads of the state during the past month and a number of charges have been filed with the state railway commission. It seems impossible for Michigan railways to give adequate service in some seasons of the year and it is the purpose of Michigan manufacturers to find out the reasons, if there are any, and force the matter to an issue.

A number of Detroit brick manufacturers went on a recent lake cruise taken by the Detroit Board of Commerce. The party went to Port Arthur and Fort William, Ont.

One indication of the increasing popularity of brick is shown in the statement that a number of motor car garages have been erected in Detroit during the past few months and in nearly every instance they were constructed of brick.



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(See Cutters.)

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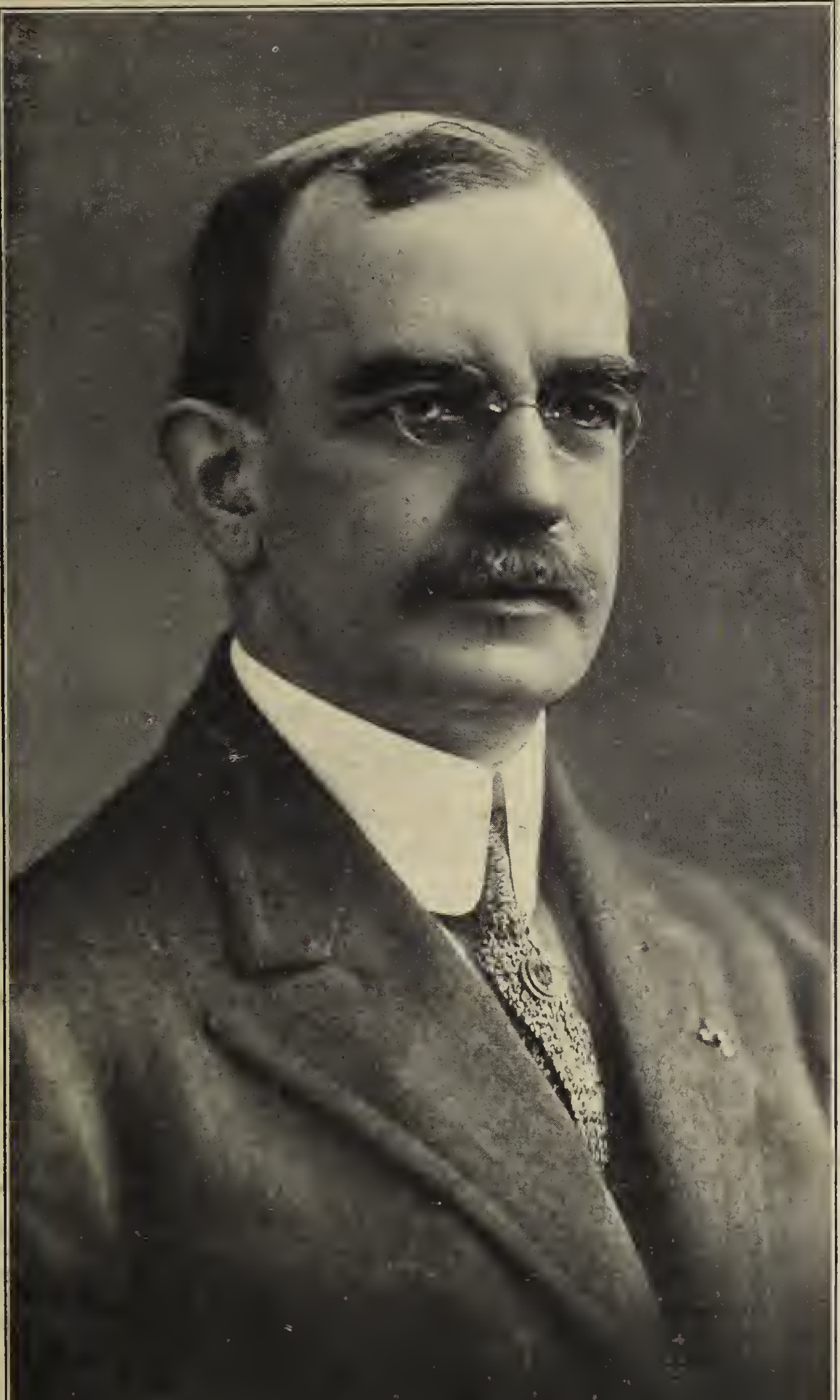

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CHICAGO, JULY 15, 1913

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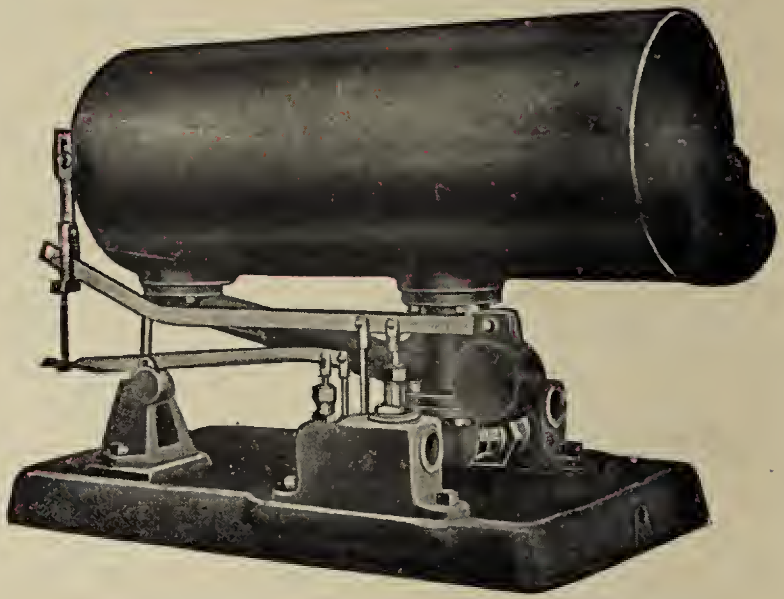

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Builds Organization of Fellow Brick Men

Robert L. Queisser,

President, Queisser-Bliss Company, Cleveland, Ohio

SUCCESSFUL organizations have, at their beginning, a purpose and a man. Sometimes they have more than one purpose and more than one man—but one purpose and one man are in the exact centre of the focus. How often Robert L. Queisser has occupied the point to which organization spokes radiated may be judged by his record or recalled by those who have been with him in his organization work.

The record is not long, but full of activity; in 1908, Mr. Queisser was instrumental in forming the Ohio Face Brick Manufacturers' Association, whose work has been a text for other state organizations all over the country. He started the agitation against the express companies, to the end that a lower rate was secured on sample brick—a saving to brickmakers of more than Fifty Thousand Dollars a year. He was one of the organizers of the Building Brick Association of America, and served as its second president during 1911. In the recent organization of the Face Brick Dealers' Association of America, Mr. Queisser took a prominent part and was elected its first secretary-treasurer.

Robert L. Queisser was born in Indianapolis, Ind., and spent his early life in railroad work, leaving a responsible position in the traffic department of the Baltimore and Ohio Railroad, to become manager of the Ohio Press Brick Company, of Zanesville, Ohio—one of the subsidiary companies of the Hydraulic-Press Company of St. Louis, Mo. He remained with that company five years, when, with William H. Hunt and C. A. Bliss, he organized the Hunt-Queisser-Bliss Company, of Cleveland, Ohio, and entered the brick and builders' supply business.

Three years ago, he acquired Mr. Hunt's interest in that company and the corporate name was changed to the Queisser-Bliss Company, an organization that is a large factor in the material business of the "Sixth City."

Robert L. Queisser does not confine his desire to mingle with or lead his fellow men, to trade organizations; he is a thirty-second degree Mason and Past Eminent Commander of Coeur de Lion Commandery, Knights Templar. Several years ago he was Grand Esteemed Leading Knight of the B. P. O. Elks of the United States. He is, at present, president of the Cleveland Rotary Club, one of Cleveland's most energetic business organizations and is director in the International Association of Rotary Clubs.

He is interested in National Guard work, being Captain Commissary, 5th Regiment Infantry and, during the past four years served as Aide-de-Camp on the Staff of ex-Governor Harmon of Ohio.

What with attending conventions of the National Brick Manufacturers' Association, conferences of delegates from manufacturers' and dealers' associations, luncheons of the Cleveland Face Brick Association, Knights Templar encampments, National Guard inspections and drills, State Executive functions and meetings of the various clubs in which he is a dominating feature, Mr. Queisser finds time to conduct a business in Cleveland along clean, forceful lines and to him, in great part, is due the "profession of faith" adopted in the eight principles of the newly formed association of face brick dealers, in which he holds the honorable and labor-bringing position of secretary-treasurer. The great movement for the betterment of brick men has no better friend, no more willing worker, than Robert L. Queisser, once of Indianapolis, but now, happily, one of Cleveland's most consistent and enthusiastic boosters.

BRICK and CLAY RECORD

VOL. XLIII. CHICAGO, JULY 15, 1913 Number 2

Clay-Working Machines

of the Past and Present

Being a Review of What Has Been Accomplished in the United States to Cheapen Production and Improve Product

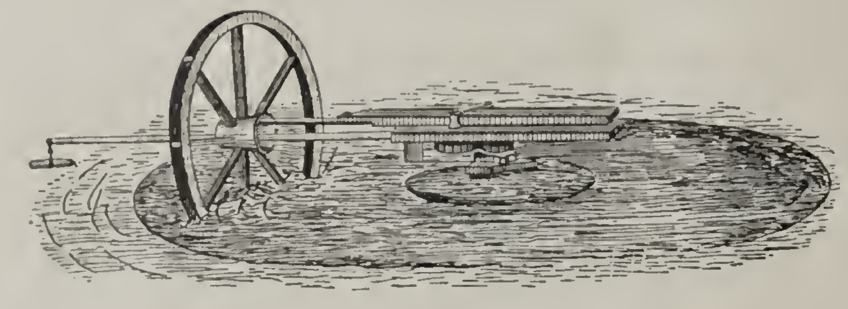
PROGRESS in clayworking machinery in the United States, like that in all other industrial lines, has been far more marked than in any other country. And, when it is considered that what has been accomplished has been done within half a century of development, the strides taken have been wonderful.

Within the memory of many of the present-day manufacturers most of the actual progress has been made, for it was only yesterday, it seems, that brick were moulded by hand and primitive methods, little removed from the manner and form which the ancient Chaldeans and the Egyptians used thousands of years ago, were in vogue.

This article is a story of what has been achieved by American manufacturers. What is said of the first steps in clayworking in this country, however, might just as well be said of clayworking for hundreds of years and even thousands of years before, as little advancement is to be chronicled until Yankee inventive genius took a hand in improving not only machinery but methods and processes.

BRICKMAKING, according to the earliest records, began in this country about 1650, the list of citizens of the settlement at New Haven (Connecticut) including men with this trade or profession. Although the Virginia colonists possessed clay of a much better quality for brickmaking, they do not seem to have made any attempt to utilize it, for the brick in the earlier houses of that colony were, like those of New Amsterdam, brought from the other side of the ocean. Indeed, there was little incentive for the early settlers to engage in the manufacture of building brick, since vessels sailing with light cargoes for the colonies would finish out with brick, which could be sold at moderate prices, and the carriage was, to a great extent, considered free. Brick were easier to load as ballast, than were stone, and had the added value of commanding a ready sale. The inventive genius of the nation was not stimulated to improve on the manner of making brick in the mother countries and those that were made were poorly moulded and under burned, comparing unfavorably with the brick of English and Dutch manufacture.

Although brickwork became common in this country in the early part of the eighteenth century, brickmaking did not become an established business until trouble began



The "Ring-Pit" Method of Pugging Clay.

to brew between the colonies and England—trouble that culminated in the War of the Revolution. And in the period that followed that war, the distressed condition of the industries and finances of the nation were a bar to any improvements, excepting such as were in the nature of repairs and necessary to make buildings safe and habitable. After the adoption of the Constitution, this condition changed, and buildings of a public character, which had remained in an unfinished state during the war, were completed. A few houses of a substantial character were erected in some of the cities and on large estates, home-made brick being more generally used than in former years. "Home-made," in this instance, meant brick made near the site of the proposed building, very much as is done in various parts of the country today. With the exception of slightly improved brick moulds, the methods now employed, in localities where a sufficient number of brick to complete the building are moulded, dried, stacked and burned all together, in a way that enables the brickmaker to "strike" the kiln after it has cooled and then use kiln and contents in the walls of his building, are identical with those used a century ago.

Finds Little Improvement Prior to 1840.

Prior to 1840 the improvements in modes and machinery were trivial. The inventive genius of those earlier brickmakers was devoted, in the main, to some means of holding the clay in receptacles larger than the brick moulds, so that enough clay to fill three or four moulds could be mixed at one time, a labor-saving device that began at the very beginning of the brickmaking process. No attempt seems to have been made, prior to that time, to improve the product, which was light, full of cracks, porous and very absorbent—almost unfit for building purposes. It is true that some very good brick were made in America prior to 1840, but the instances are few, and are the exceptions that prove a rule.

A search of the Patent Office records shows a commendable activity among manufacturers of brickmaking machinery, in the twenty years prior to the Civil War. John W. Crary, in his work "Sixty Years a Brickmaker," published in 1891 says: "In 1867, I determined to publish a short treatise on brickmaking, and went to New York City to select material to aid me in my work, but, to my astonishment, the largest and best libraries and bookstores contained no book on brickmaking, and the little I was able to glean, with the aid of expert clerks, and from books of general information, was of such a perfunctory character that I abandoned the effort to compile anything from the writings of others, and proceeded to publish a short treatise on the art of brickmaking, from my own experience. Since that date, the increase of cyclopedic literature has furnished much on the subject of brickmaking, from which it would be comparatively easy to compile a book, but when done, it would be of no practical value to the craft.

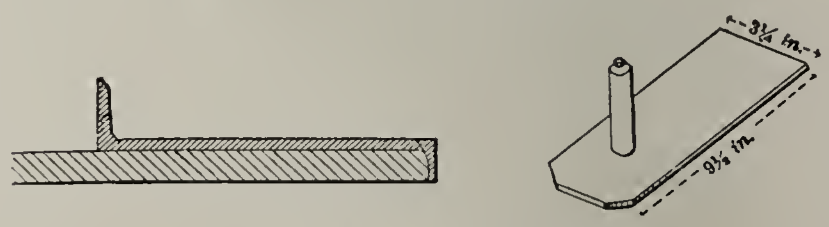
"The progress that has been made in the manufacture of brick and all kinds of clay goods in the past twenty-five years, renders much of what has been written by theorists, obsolete."

It is probable that for fifty years, covering the period that bridges the years 1840 to 1890, improvements in processes and machinery were many, but not radical, considering the growing importance of the industry, the amount of capital that was being invested, and the great number of years that remain, so far as brickmaking literature is concerned, dark ages.

In New England, today, "water-struck" brick are made by practically the same processes that were used in the early part of the nineteenth century. In Illinois, at one of the largest single units in the face-brick making industry, sand-moulded brick are made with so little change from the methods used in the days when these United States were colonies, that one looks for the musket and powder-horn in the corners where coats are hung and dinner-pails shine in the light of the incandescent lamps.

Describes Hand Process.

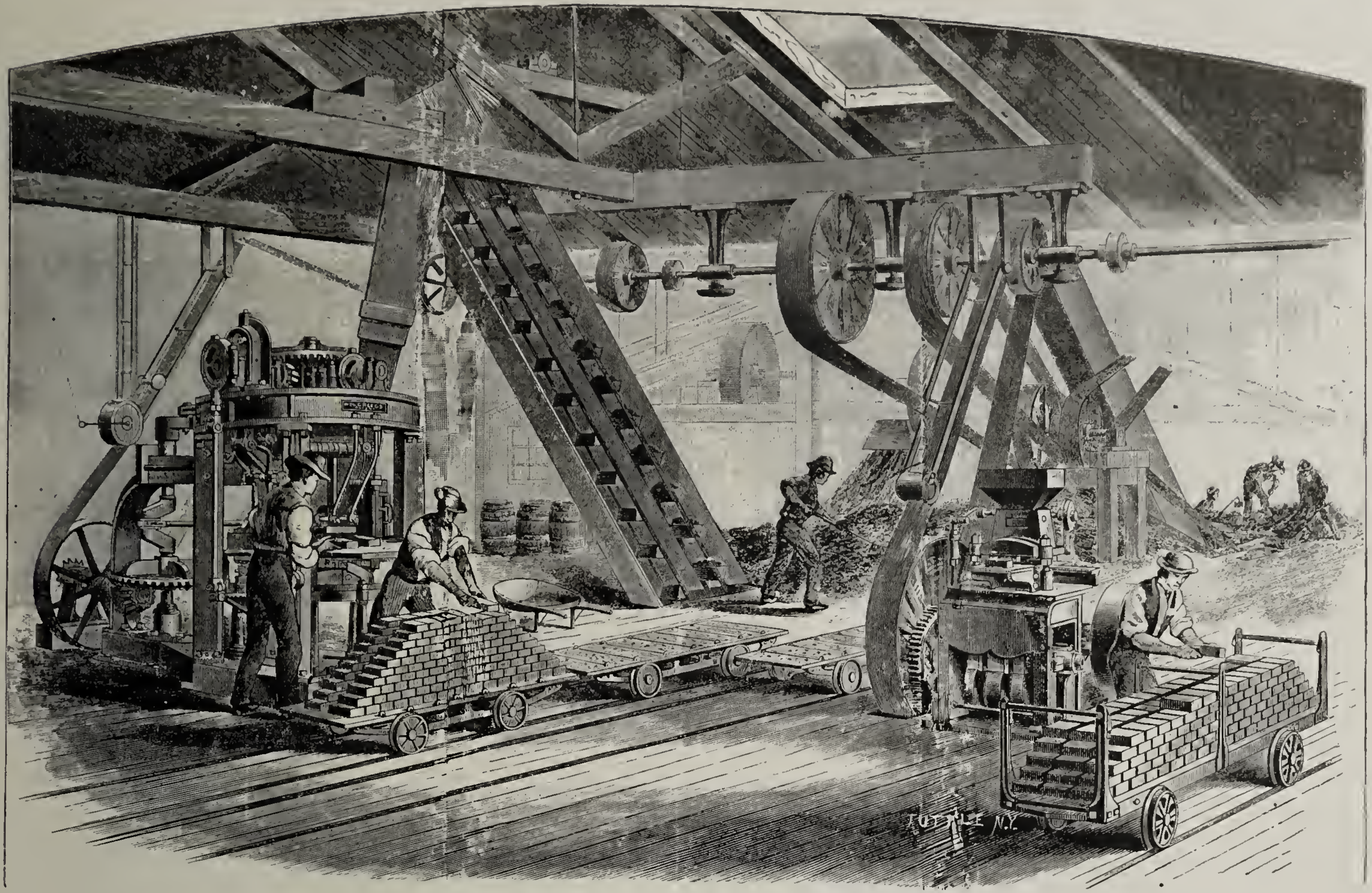
Charles T. Davis, in his "Practical Treatise on the Manufacture of Bricks, Tiles, Terra Cotta, etc." (Henry Carey Baird & Co., Philadelphia, Pa., 1884) in describing the process of making bricks by hand, says: "We shall follow the manner of production by the hand process, as it is in the District of Columbia, for the reason that the manner of the manufacture of bricks, as it is conducted in the city of Washington and its vicinity, is about the same as that in most portions of the country. Also, for the additional reason that the common run of building bricks produced there are, for strength, uniformity of color and size, good edges and corners, and for all other reasons that can be named, the best that are made in any part of the world. The reason for this is that the enormous quantities of brick consumed by the United States Government and the local government have, in both cases, to pass the inspection of engineers in the Army or of experts employed for that purpose. From this cause, the common bricks have reached a high standard, as the annual consumption by both branches of the government have, for many years, exceeded more than one-half the total production. Pressed or front bricks have not, until lately, been extensively used in Washington for facing the government buildings." It will be noted that this is written in 1884—only thirty years ago.



Moulders Cleat and Plane.

In his description of these yards, he states that the clay was tempered in three ways—by hand, by pug-mills and by ring-pits, the first being employed mostly in the manufacture of the best pressed bricks. He says: "The man who does this part of the work is called the 'temperer' and it is his place to throw the clay into a pile, the day previous to its being used; while he is spading the clay into a pile, he at the same time throws water upon it; this pile of clay, when finished for common bricks, contains clay sufficient to make 2,333 bricks, and is called a 'soak heap'.

"The next morning, before the moulder is ready, the 'temperer' commences by pulling part of the 'soak heap' down with a hoe; the portion of the clay thrown down is wetted with water and turned over many times with a



Interior of Machine Room in Brick Plant in 1880.

spade. Having done this for a while, he next trims the small pile of clay into shape, and commences to cut through it with a 'slasher' and any stone that he may strike with the 'slasher' is picked out of the clay. After cutting the clay for a time in this way, it is again turned over with the spade, after which it is ready for the moulder. This operation is continued until all the clay in the 'soak heap' is worked out, after which the 'temperer' throws up another similar pile of clay, which is allowed to soak through the night."

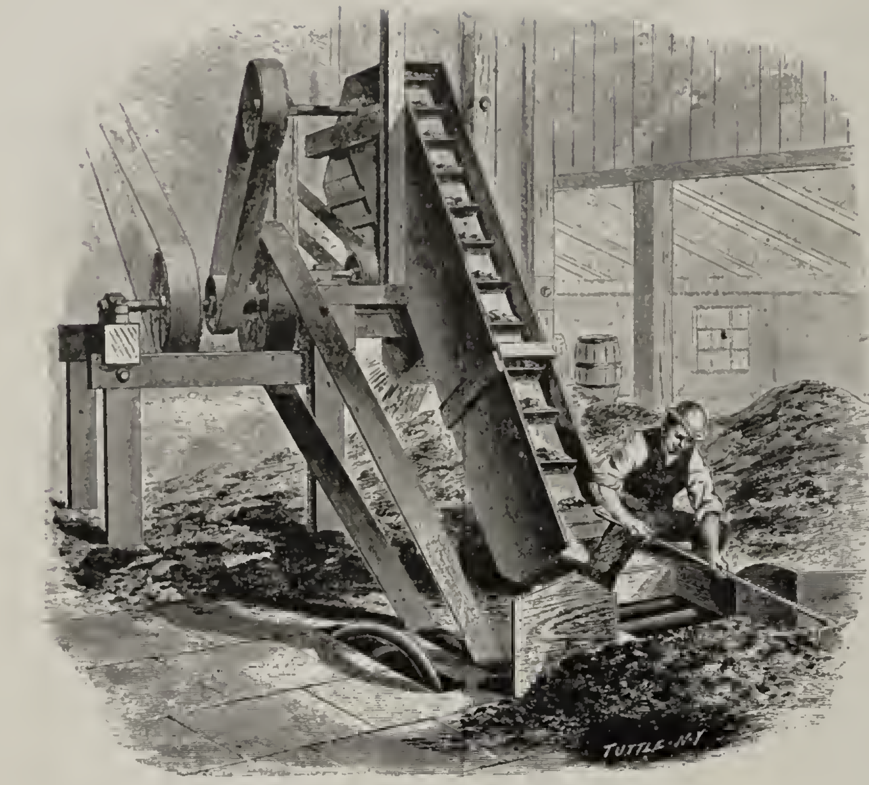
It would appear, from the above account, that the daily "output" of the "temperer" was but a trifle over two thousand brick. He was, however, given other work to do, to round out the day's work, for Mr. Davis goes on to say: "When hand 'temperers' are employed, in addition to this work, they are required to turn up ten rows of bricks on edge and, after they are sufficiently hard to wheel, hack them in the drying-shed." He describes the tools required as "an ordinary Ame's No. 2 spade, a hoe, similar to a No. 3 English hilling hoe, one wooden box, open at one end and top, with a long handle in the solid end, and called a 'scoop'—used for throwing water on the clay—and a 'slasher,' which is a piece of wrought-iron, about three inches wide, three-eighths of an inch thick and about three feet long from the handle into which it is driven, the handle being round, and about two and one-half feet long, and two inches in diameter."

Common brick made from clay tempered in this manner were, he says, not so good as those made from clay tempered in other ways, as the clay was not packed together with any pressure and the brick, after being burned, were very porous. In making pressed brick, however, the result was very different, since the "brick, after being moulded, are pressed very hard in a hand press."

A description of the pug-mill used thirty years ago shows that the process was little different from that employed today, excepting the pugged clay was cut off, as it issued from the orifice at the bottom of the pug-mill, when the machine was vertical, or from the end, when horizontal, by the wheelers, who thus filled their barrows and took the clay to the moulders.

The "ring-pit" method of tempering clay is described as follows: "These pits are about twenty feet in diameter and two feet in depth, and hold clay sufficient to make about 14,000 bricks. They are cased around with hard burned bricks, and the bottom is usually covered with oak planks, cut wedge-shape. Hard pine is cheaper than oak and is also used. There is a pedestal firmly set in the centre of the pit, upon which the machinery that works the tempering wheel is placed. For a ring-pit worked with horses, there is a long shaft of iron passing through the centre of a wheel about six feet in diameter and terminating beyond the ring far enough for two horses to be hooked to it and have room sufficient to travel around the ring with it. There is a gearing of wheels so arranged as to gradually push the tempering wheel from the centre to the outer edge of the pit, while the wheel is revolving around the circle, and when it reaches the outer edge to gradually draw it toward the centre of the pit again. Recent changes have been made in the wheel, by placing the spokes at an angle, producing a dish in the wheel so as to suit the circle of the pit, saving the labor of the horses; it also grinds and leaves the surface of the clay level in the pit during and after grinding."

We find that the next process in the making of hand-made brick is moulding, which the author describes in the following words: "This is performed in light cast-iron boxes, having both the top and bottom open and unobstructed, and which are twice as long as they are wide.



The Pug Mill and Clay Elevator of 1884.

The wheeler brings the tempered clay to the moulder and piles it upon a wooden stand in front of him. The stand, which is called a 'table,' is about four feet square, and made in a height to suit the moulder. On the left-hand corner of the table is screwed securely a piece of cast-iron, one-half inch thick, nine inches wide, twelve inches long, and turned up at one end, and down at the other. This iron is called the 'moulding cleat.' The moulder, with both hands, pulls down a lump of the tempered clay, takes a handful of moulding sand in his right hand, from a tub close by, throws the sand over the lump of clay, works clay and sand into a peculiar shape called the 'warp' and dashes it down with great force into the mould which rests upon the moulding cleat, using both hands. Having done this, he takes an instrument somewhat resembling a plasterer's trowel, called a 'plane' and strikes off the clay piled above the top of the mould.

"The off-bearer now takes the mould and the inclosed brick, lays the brick on the 'floor,' scrapes the inside, and particularly the corners of the mould, with a knife that is suspended by a string from his side. The off-bearer places the cleaned mould in a sand tub convenient to the moulder and, by the time another brick is made, he is ready to place it alongside the other on the 'floor.' This is continued until there are fifty-eight bricks in a row, and the rows are continued until they number forty; then part of a row, containing thirteen bricks, is made, which completes the 'task' of moulding. Each gang, for a day's work, produces 2,333 bricks. The material used for sanding the moulds is very highly impregnated with oxide of iron and mica; the iron gives a beautiful red color to the hard burned bricks and the mica allows the brick to slip easily from the moulds. The usual time for a good gang to do a day's work of moulding is from five to five and one-half hours."

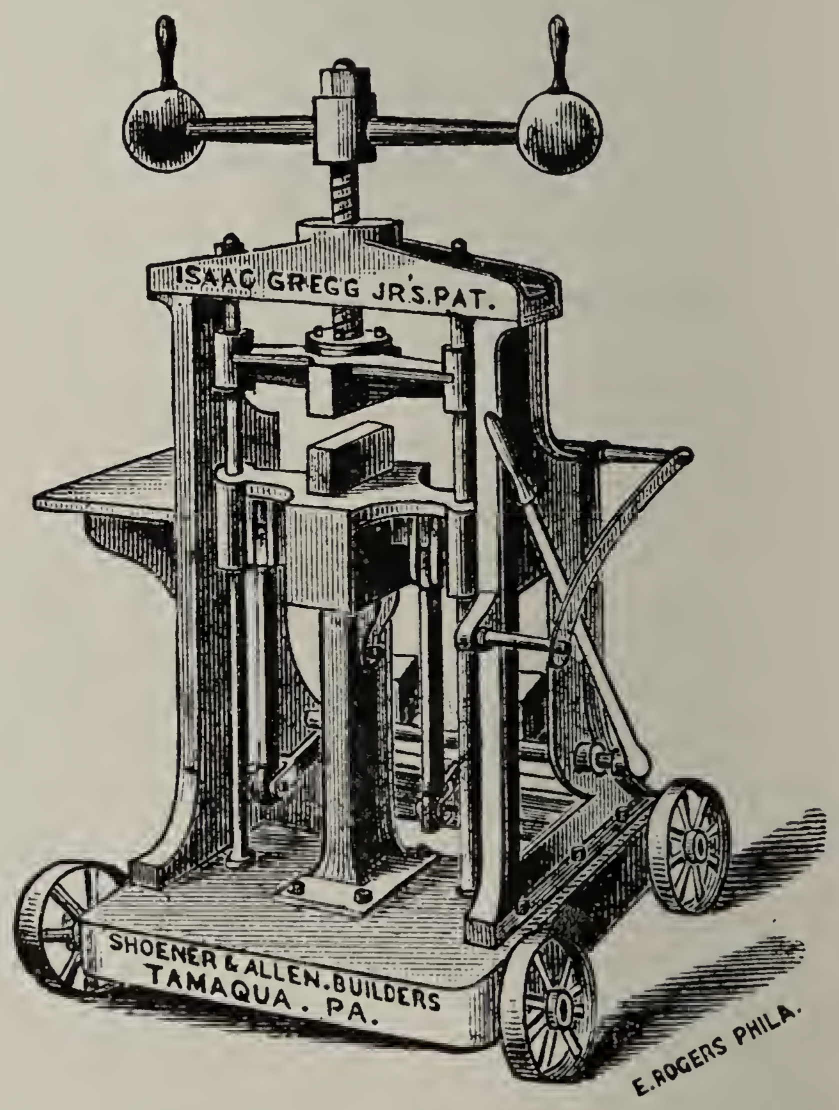
It seems that custom made the "task" of each gang very specific. Three men, the moulder, the wheeler and the off-bearer made up a "gang" and the day's work was not complete until the 2,333 brick had all been safely placed in the drying shed. The moulder was responsible for the placing of fifteen rows, or 870 brick and the wheeler for a like number; the off-bearer was responsible for the remaining ten rows and the fractional row, so his "task" was only 593.

The first step in the drying of hand-made brick was to turn those upon edge that were made the previous day. If there were no indications of rain, the brick were turned up early in the morning, and allowed to stand upon edge, exposed to the sun, until four o'clock in the afternoon, when each man "took his share" and hacked them carefully in the drying shed. Here the usual method was to hack or pile the brick eight courses high, on edge, and the hacks were kept separate, to insure a free circulation of air. If there were any indications of rain before the usual time for "taking in the brick" and any of them were hard enough to handle, they were wheeled into the shed; but if not sufficiently firm, they were left to be "washed"—that is, the brick were turned bed up so that their faces might not be pitted by the drops. The average time for drying brick in this manner was two to three weeks, although, in very rainy seasons, four weeks sometimes elapsed before the brick were dry enough to be taken to the kiln.

Setting kilns thirty to fifty years ago was done in about the same way as it is done today, due allowance being made for the natural differences due to the adoption of new kiln types.

The method of burning hand-made brick at the period of which Mr. Davis writes, was practically the same as that used today, in "scove" kilns. He says that he has "selected this class of kilns in describing the process because they are, unfortunately, the ones that are generally used. There are," he continues, "various other kinds of kilns, many of which have decided improvements, especially in the consumption of fuel. The Hoffman, and many other annular kilns, lose no heat and are very effective; the over or down-draft kiln is also an excellent improvement."

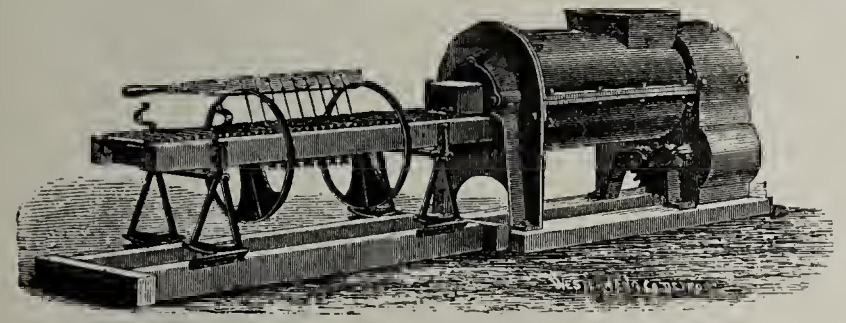
Brick machines—that is, machines for forming the pugged clay into "green" brick—have been divided into


ISAAC GREGG JR'S.PAT.
SHOENER & ALLEN. BUILDERS
TAMAQUA . PA.
E.ROGERS PHILA.

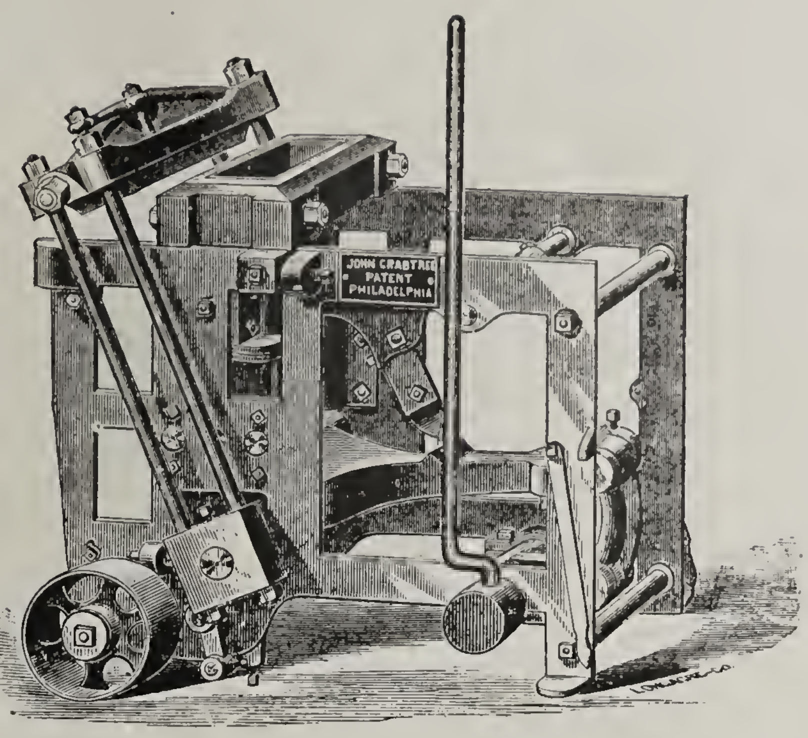
A Repress Patented by a Chicago Inventor Forty Years Ago.

two classes: The first employs moulds to force the clay into shape and the second shapes the clay into a long, plastic bar, which is afterward cut into brick shapes. The repressing machine used in some stiff mud plants, to overcome the mechanical deficiencies of antiquated cutters, belongs to the first class, as do all dry-press machines and moist-clay and slush or soft-mud machines. The brick produced by the first class of machines (those embracing the mould feature) are apt to be more regular in size, to have better edges and to be more perfect mechanically, than those made by the clay-column type. The latter, however, have the advantage of not breaking the "bond" of the clay, and have a tendency to burn to more brilliant colors than brick that are "pressed" or "repressed" from the same clay and burned with the same coal. This, of course, does not apply to "dry-press" brick, which are naturally brilliant in color, particularly in fire-clay and iron mixtures.

We have tried to give, in the description of hand-made brickmaking, a picture of the yesterdays in the clay-crafting art. What a vivid contrast it presents to the picture of today's progress. In this year of our Lord, 1913, the prospective brickmaker, having located a clay or shale deposit, and found it to be within an economical freight distance of one or more brick-consuming cities, thus assuring a "home market" of ample proportions, and sufficiently near one or more trunk lines to assure a prompt and ample car supply, sends for a plant designer and to him submits his prospect of future prosperity. He secures an analysis upon his clay, theoretical at first, and practical afterwards, to determine what ware that particular clay will make cheapest and best. He secures the best information obtainable, as to controlling prices in near and distant markets, feels the pulse of the demand, as to color and quality—learns, before he has invested so much money that he cannot withdraw—whether he can get a fair price for what he intends to make, long before he actually begins making it. He also learns whether there is a natural market for the capacity he intends to reach in his first installation, or for the capacity which the plant expert tells him is the most economical.


The Centennial Tiffany Combined Brick & Tile Machine, First Exhibited at the Exposition in Philadelphia in 1876.

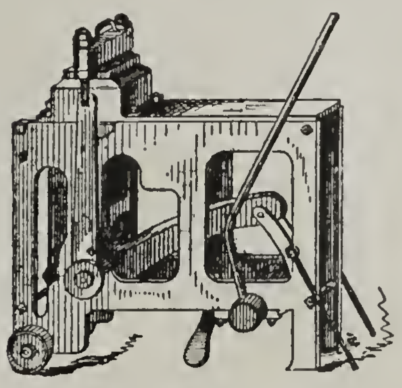
With these investigations made, and the results giving him assurance of success, he bends a listening ear to the advice of the plant expert. Shall his machinery be placed near the clay supply, or near the railroad? The plant expert is there to tell him. Shall he sacrifice present compactness for provision for future growth? The plant expert knows the story of both—the successes and failures that have attended both methods. Shall he install electric motors or depend upon steam power? Again the plant expert—truly a brick-yard doctor—is ready to advise, prescribe and insure long life and business health. If, after practical tests, the plant expert finds that the location, the clay, the limited capital or the distance from brick-hungry markets is so great as to make the success of the enterprise doubtful, he tells the prospective brickmaker, and that lucky individual, instead of owning a white elephant, is minus the expert's fee—a moderate premium to pay on an insurance against ignominious failure.

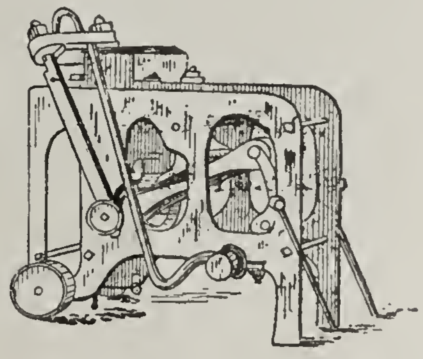


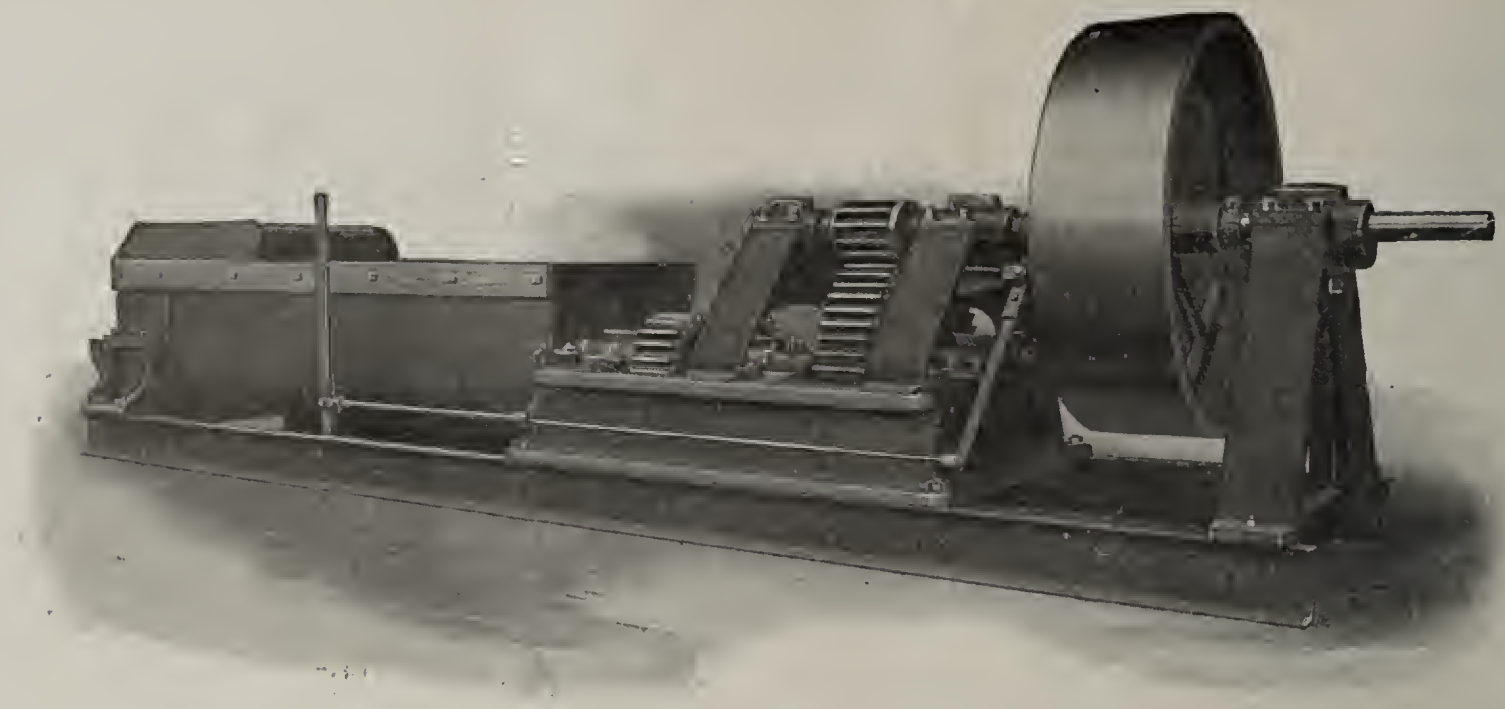
The Peerless Press, Patented by John Crabtree in 1882.

Here, it will be seen, he relies on not one, but two sources of advice. The men who wanted to, or who did sell him the clay-land, were interested witnesses. The dealers in adjoining cities, who hoped, by giving him information as to current prices and withholding the full truth of his competition, to win his regard and so, eventually, his account, had an axe to grind. The traffic managers of railways that desired the building of industries along their lines could not be expected to be as zealous in performance as they were in promises—the man with a clay deposit—not necessarily a good one—and a bank account (the latter must be good) will find many men ready to advise his going into the brickmaking business, and few, very few, to advise caution. But the plant expert earns his fee if the plant be built or if it remain on paper, and he brings to the man who is assured in his own mind that his coming plant is a success, even before the kiln fires are lit, a ripe experience that he sells very cheaply, considering what he gives for the money.

Let us suppose, however, that every precaution has been taken and that the plant expert advises going ahead. The property is plotted, sidings mapped, buildings planned, kiln sites located, systems of clay-harvesting, clay-hauling, clay-disintegration and preparation decided upon; a method of brickmaking is chosen, according to the product that is planned, a dryer system adopted, a type of kiln picked from among a multitude of excellent types, mechanical devices for handling the unfinished and finished product from kilns to sheds or cars, are either bought,


The Miller Press.


The Carnell Press.



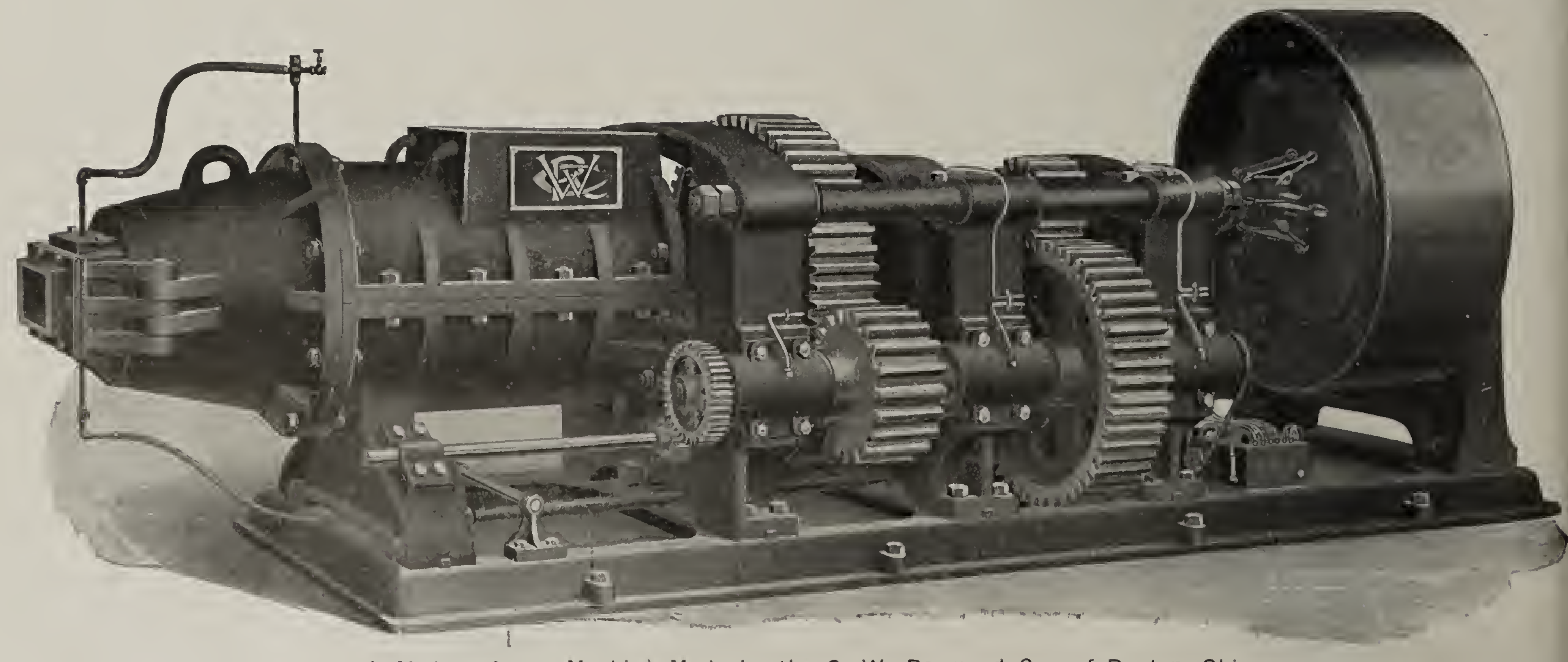
A Modern Auger Machine Made by the J. D. Fate Co., of Plymouth, Ohio.

or, if the available capital is beginning to dwindle, made the subject of future consideration, with space left in the general plan for future installation. Contracts are made with the railroads that are to bring coal (and perhaps clay) into the plant, and take finished brick or tile away from it, to build the buildings or tile the farms of distant buyers. The work has begun and a new clay-working plant is launched—its dip into the seething sea of clay-working guided wisely, the ways soaped with forethought, experience and painstaking, practical knowledge. And it starts out under sunnier skies than many of its competitors, which, if truth be told, were conceived in ignorance and born of incapacity.

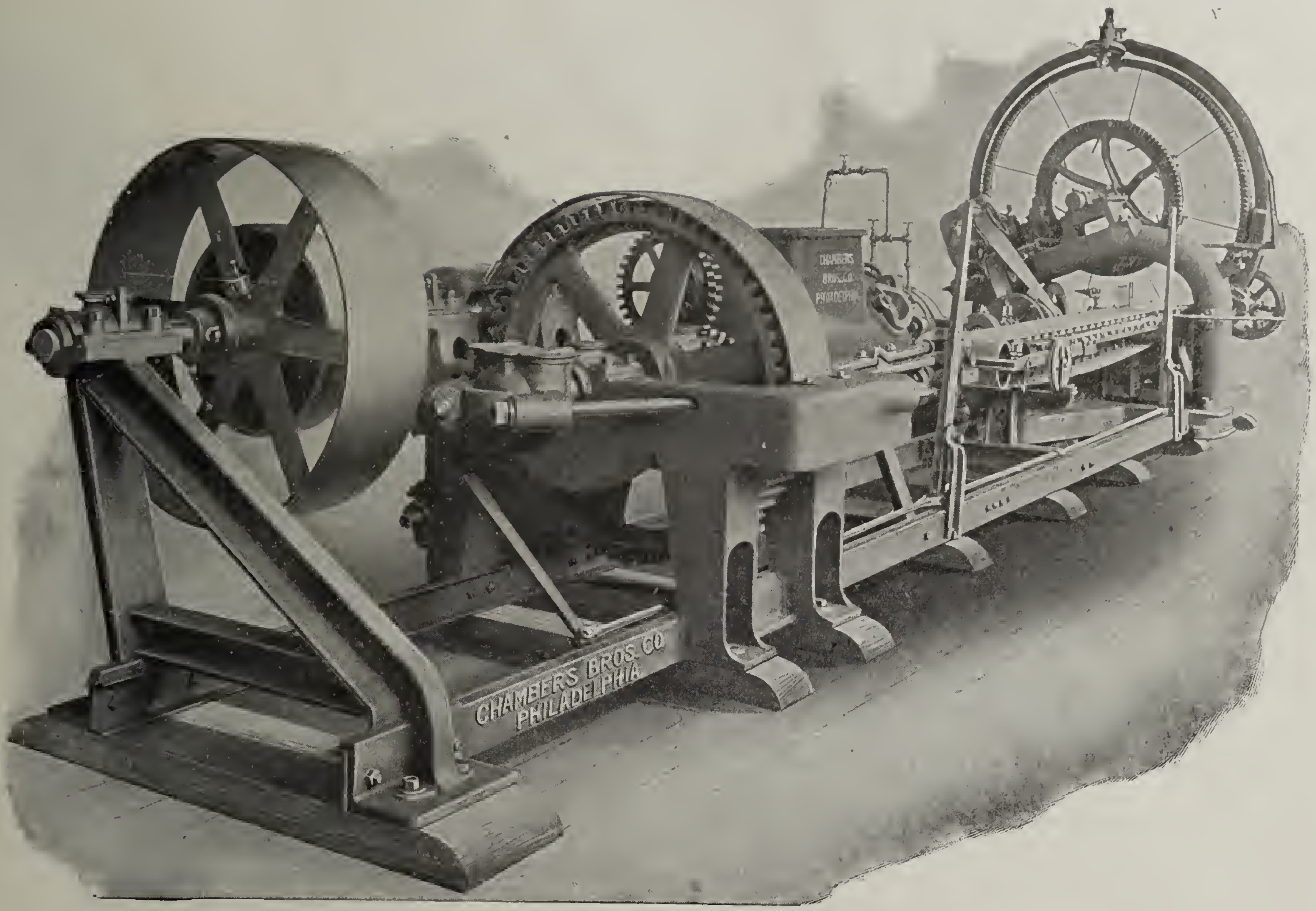
Compared to the clayworker of the latter part of the nineteenth century, the man who is building a plant today has an immense problem to solve in his choice of methods of manufacture and the machinery that will be required. Confronting him is a sharply contending, intensely efficient portion of the machinery world, made up, in the main, of men who have made clayworking and clayworking machinery a life study. Each, in his own special line, is an expert—each has inproved and eliminated, until his machinery is standard. Each has a splendid argument for the process by which his machinery makes brick or tile of flowerpots or pipe, and the very fact that all of these machinery manufacturers are prospering, in the face of the keen competition that exists, proves that the underlying principals upon which they have built their various machines and their business itself, have been sound, consistent and economical.

So it is largely a matter of buying machinery that will meet the natural conditions of his clay-pit, mine or bank, the requirements of the clay itself—that will make the best ware most economically, that causes him to ponder. As one authority says: "some . . . . may tell you that 'you can make anything with your clay.' There may be clays of such a nature that almost anything in the clay line can be produced from them, but they are scarce, mighty scarce". This choice is imperative in the harvesting of clay, since Nature takes a hand in the matter and man has but to choose the methods that will gather his raw material for the least cost per square yard, separating the good from the bad, where separation is necessary, or mixing shale and outcrop where the two can be worked together.

He may need a power shovel, taking and up dumping a cubic yard or more of clay, in a few seconds, or a shale shaver, the latest invention in clay gathering devices, that



A Modern Auger Machine Made by the C. W. Raymond Co., of Dayton, Ohio.

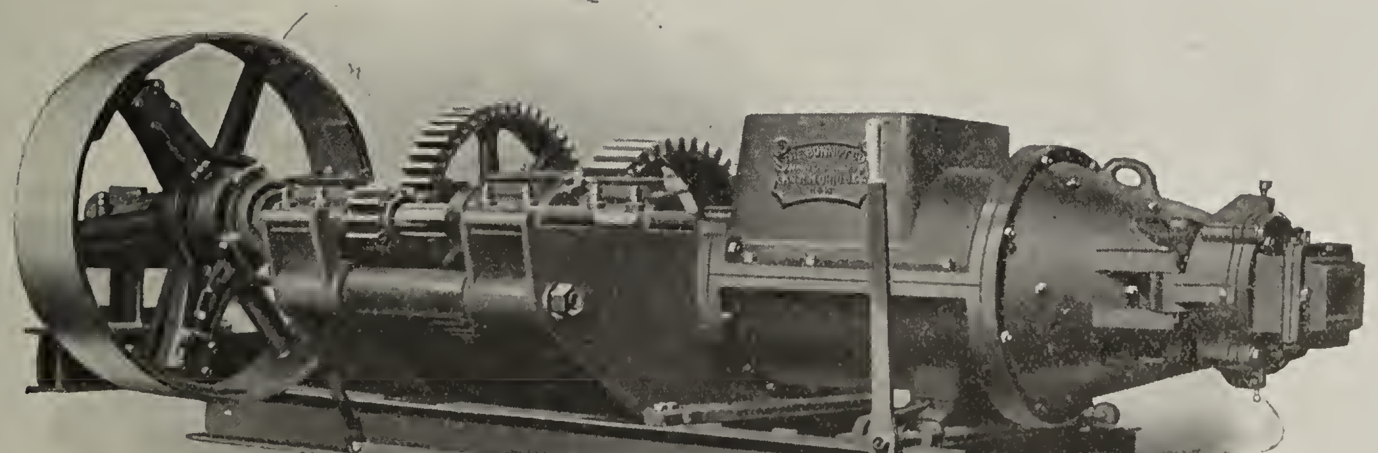

CHAMBERS BROS. CO. PHILADELPHIA
CHAMBERS BROS. CO. PHILADELPHIA

A Modern Auger Machine with Cutter, Made by the Chambers Bros. & Co., of Philadelphia, Pa.

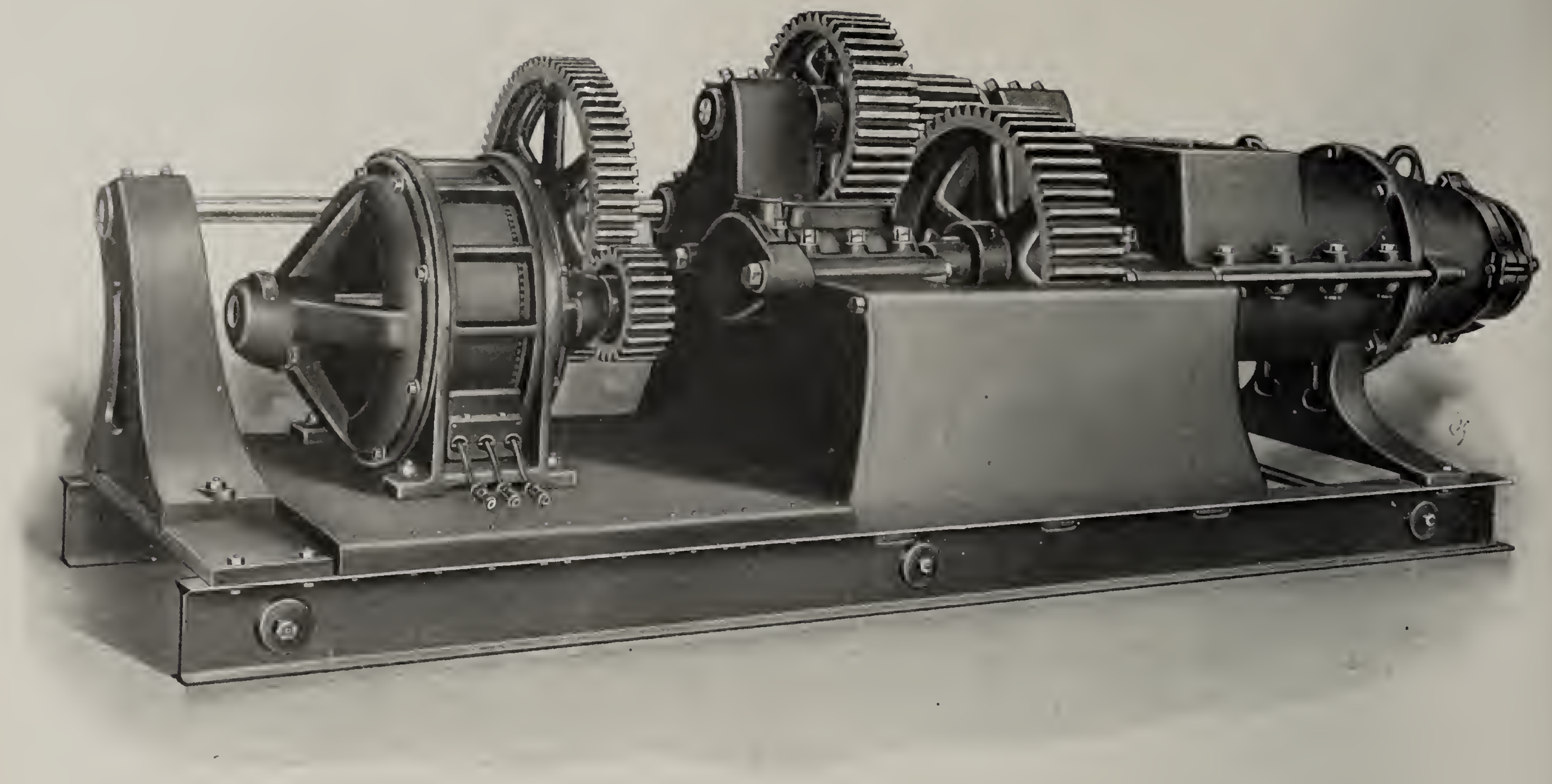
shaves off the face of a shale bank as smoothly as a Gillette crops the beard of a college graduate. He may mine his clay and need dump cars and car pullers, pulsometers, gasoline motors or dynamos and electric equipment, not only for traction but to light the workings and speed the drills. Or he may use independent boiler and steam lines to work the drills—or compresed air.

His clay formation, on the other hand, may be such that a combined scraping and automatic dumping machine will best meet his needs. Aerial tramways may be required, or some other long field conveyor system. Rocker side-dump cars, steel quarry cars, industrial locomotives of one or another excellent types, steam, gasoline or electric driven, may prove his best investments. The lay of his land, the nature of his clay, the needs of his ware will all help him in his selection. Again, his clay may need weathering, to counteract natural impurities or for purpose of disintegration and reclamation. Here belt conveyors may be found practical and a storage system a prime necessity. In this department, labor-saving machinery has been brought to a high state of efficiency and as each step of clayworking becomes more expensive per thousand product, a greater number of brick or tile or pipe can be made perfect for less money in the initial processes for less money than if curative measures are adopted later on in the course of manufacture.

In building his power plant, he meets the mooted question



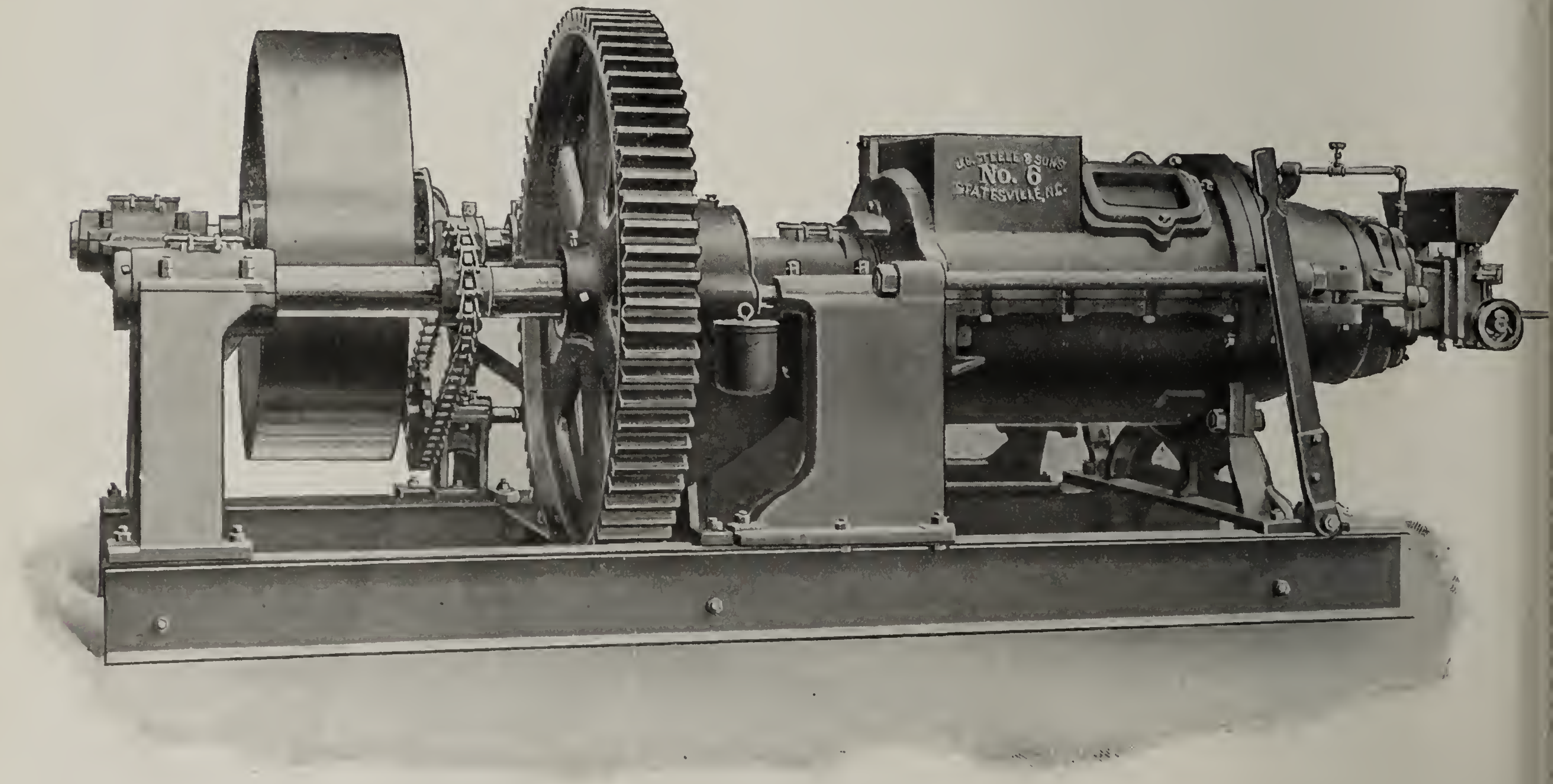
A Modern Auger Machine Made by the Bonnot Co., of Canton, Ohio.



Modern Auger Machine Made by the American Clay Machinery Co., of Bucyrus, Ohio.

of Steam vs. Electricity and installs one or the other, as the circumstances warrant. If steam, he has to choose between modern tubular boilers and those of an older type; if he be wise in his generation, he considers his power transmission as a unit and lets a power expert work out his problem for him. He considers various standard makes of belting, belt-surfacing compounds that increase the efficiency and wear of the great leather, canvas or rubber ribbons that are the arteries of his power, installs safety devices, gears, pulleys and shafting, pillow blocks, high pressure pipe covering and recording gauges. If he makes or harnesses the lighting, he either buys power or installs a dynamo and lights his plant with the same equipment that turns his wheels.

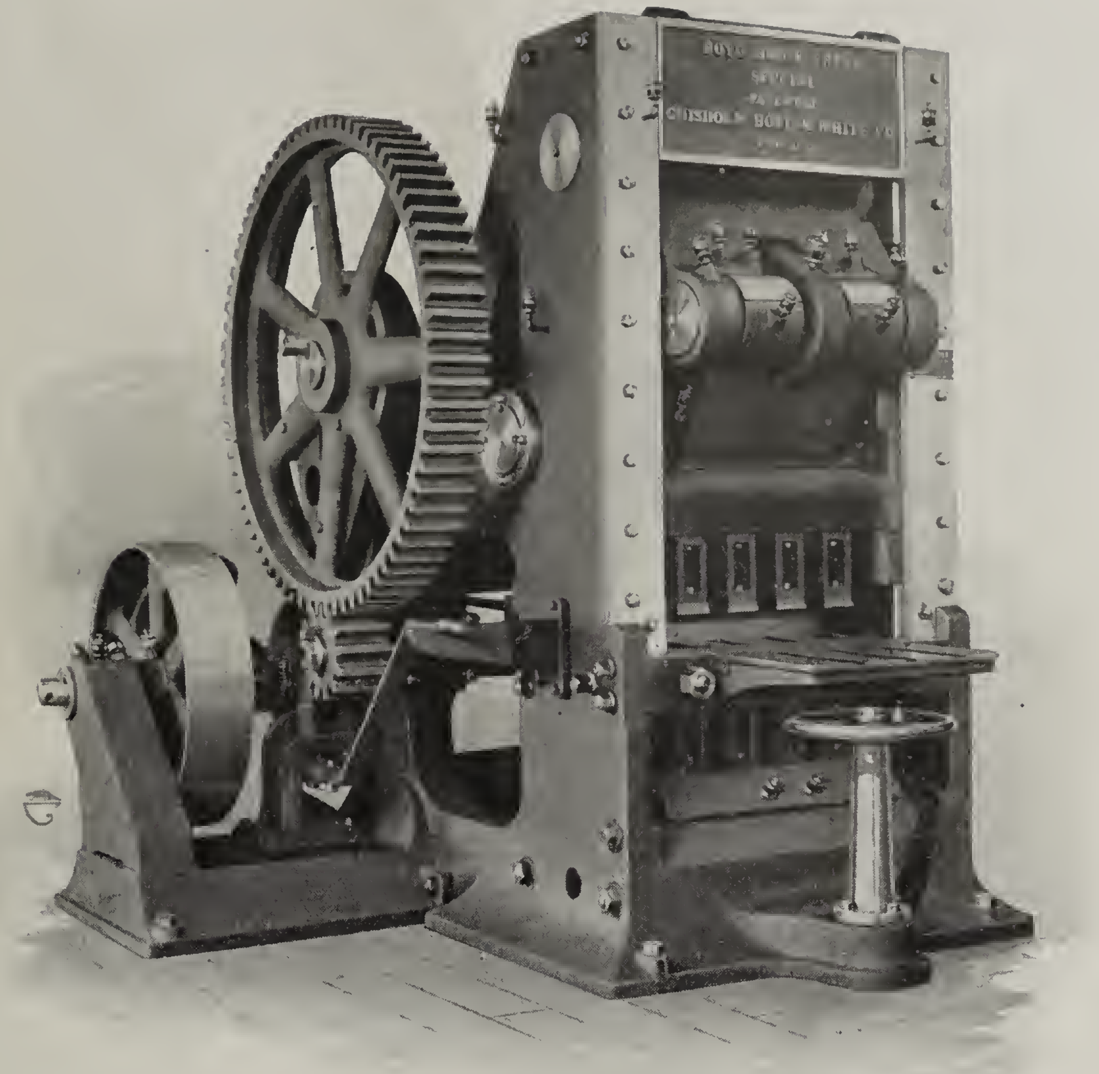
The nature of his clay will have a bearing on its preparation; he may grind it wet or dry, according to its formation as it comes to the pans. It may be found best to install a dryer and so prepare the clay before it is ground to the proper fineness. In this department he finds his puzzles old ones, the answer to his questions already worked out



Modern Auger Machine Made by the J. C. Steele & Sons, Statesville, N. C.

for other men who have had similar difficulties to meet. His pan-feeders may be human and wasteful of human energy, or mechanical and symbolical of conservation. But beyond the disintegrators he will need screens, and must choose between the perforated metal and the piano-wire types, automatically and self-cleaning or stationary, according to his clay and his ware. He will need spiral or belt-conveyors, portable elevators, elevator buckets of some well chosen dimension and, lastly, storage bins, to receive the clay when the other machinery is shut down and store it against the time when the pan capacity will be lower than the hunger of the presses or pug-mill.

We will have to assume that he has chosen the process by which his brick will be made, (in case his is a brick-making plant) and imagine he has made up his mind whether he will make dry-press, soft-mud brick or stiff-mud brick. If the former, he has found that dry-press machinery has been improved until it is the last word in this branch of the brick-making art. If soft-mud, that the machines of today are widely different from those that were used some years ago and the sand-moulds and sand distributing machines are as nearly perfect as human ingenuity can make them. If stiff-mud is his working principle, he has various pug-mills and auger machines for prepared clay, others for rougher clay, brick machines with every conceivable kind of self-lubricating dies and mouthpieces, automatic cut-offs, appliances for the coating of his clay column with an enameling "slip," with sand, or to cut, drag or impress its surface with a special texture that may one day, make him famous.


The Boyd Dry Press, Made by the Chisholm, Boyd & White Co., of Chicago.

In his choice of a dryer he has, doubtless, consulted an expert. He may, as a result, fix his mind upon a system that uses waste heat (much will depend upon the type of kiln he uses) or a "dry kiln" that uses a coaling device entirely independent of the other heat producing agencies on his plant. Or he may decide on a steam heated dryer, with return steam traps and other devices to economize on the most valuable—next to human energy—factor in his plant, the factor of heat units. If waste heat be used, he will need a power fan—indeed, he may find one necessary with any heating system, if his ware require a steady circulation of air in the dryer tunnels.

The supposition is that he has provided himself with a sensible system of conveying the green ware from the machine room into and through the dryer. This will consist of steel cars and, possibly, of steel pallets: the traction will depend upon his main power principle and will eliminate wherever possible, the "transfer man" and his human imitation of mule-power. If he be wise, he will have oil-boiling thermometers at various points in the drier tunnels, the gauges protruding from the dryer roof and telling of increased or decreased temperatures at the intake, centre and outlet of his tunnels, so that he can "spot" the point where his ware is checked or sweated.

In building his kiln or kilns he will be guided by the quality of his raw material and by the kind of finished ware he intends to put upon the market. In up-draft he has a process that has a long history to commend it; in down-draft, the round and square type contend for supremacy; in continuous, the improvements are radical, the results excellent and the fuel-saving factor too important to be lightly ignored. He may burn with coal and so be compelled to choose between grateless furnaces, or grateless gravity feed boxes, or he may see his way clear to using the old style grate bars and be happy in the conviction that his burners will attend his fires so well that after all, "the old way" will be "best". If his ware is such that he does not need the sulphur gases of coal combustion to bring out its color, he may use gas—natural or producer—and so solve his coal problem much as the man did who cut off his dog's tail right behind the ears. But in any event, he will need kiln hardware, perhaps band-lugs and other necessary iron-work, all of which have been invented and are being used by clayworking plants successfully.

No longer content to depend upon measuring the amount that the kiln (or rather, its contents) has settled, to determine the temperature to which his fires have been carried, he installs electric pyrometers, preferably connected with recording gauges in the office of the works, where he can, himself see that the temperature is increased steadily, maintained properly and made to conform to previously successful burns.

Doing away, so far as possible, with what has been aptly termed "the autocrat of the brickyard"—the wheeler—the modern clayworker installs a carrying system from kiln to shed or car. Here the fineness of his product and its frailty, after burning, must determine the carrier he is to use, in any event, he does away with the irritation of a type that is on the borderland of skilled labor, since it must do some sorting, and so use some of the brains with which it is endowed, yet be strong and sturdy enough to act the part of human locomotives, with no mean load. Nine-tenths of the labor trouble in a clayworking plant starts with the "wheelers"—on their decision to work on not work, on their judgment as to whether it is too hot or too cold, too wet

Modern Steam Shovel Made by the Marion Steam Shovel Co., of Marion, Ohio

or to closely following a holiday or pay-day, depends his ability to run his plant to capacity. A defection among the wheelers and—a few days later, "hot kilns" will stop the yard as effectively as a complete machinery breakdown.

Modern Type Steam Shovel Made by the Thew Automatic Shovel Co., Lorain, Ohio.

As a last word in plant efficiency, the now fully fledged clayworker puts a stop watch on his own particular province—plant economy. He installs a complete cost system, that enables him to know—not to guess, or to be told—what each department is costing every day, and what it produces for the money he has spent and will spend every day, as long as he makes imperishable ware from the silurian mud or glacial deposits he has bought or leased. He has built a plant with a certain fixed capacity—now it is his task to see that the output is "capacity" and that an ever increasing percentage of the first quality ware is being taken from his kilns. This is truly a man's job—we might better say an owner's job—for the superintendent is but a foreman over foreman and it is his province to see that the last ounce of human energy is given the plant by the men over whom he has been placed—the last pound of power out of the machinery, the last heat unit out of the fuel. If he does these things and does them well, he will have but little time to devise the ways of doing what he is hired to do.

Modern machinery, modern methods and modern cost systems are the handmaidens of the modern clayworker. In the last analysis, he must be the directing force, his hand on the capacity, his eye on the recording gauges and his mind on the problem that comes up, fresh and smiling, every morning as he comes to the plant office—the problem that his competitors are trying to solve and, in many cases solving, and so making their competition keener—the problem of reducing cost without loss of production or impairment of product.

The clayworker who cannot say, at the end of any given period, "I am making my ware cheaper and just as good—or better, and at no greater cost—than I did in the last period" is not keeping up with the march of progress nor meeting, before it becomes dangerous, a competition that is wide awake to the necessity of cost reduction as a means of profit securing, knowing that spasmodic efforts for general publicity cannot be depended upon to bring higher prices in time to save plants that are not on a paying basis.

PLANT EXPERTS GROWING IN FAVOR.

Increased Demand for Clay Works Engineers to Prevent or Remedy Trouble.

Modern competition demands the production of a maximum of good ware at a minimum of cost. "Receivers' Sales" and "reorganizations" record the all too frequent failure of clayworking plants to make good the promises that led their owners into the field. Starting with what seemed a good clay deposit, the early steps are taken by men who have had little or no experience with clayworking plants and the result is a long story of inadequate buildings, badly located, incomplete drying systems, poorly built kilns and ultimate defeat. One veteran said that ninety per cent of the men who started plants had either too little experience or too little money, or both, but his statement might have stopped at "too little experience" and have told the greater part of the story. The crying need for experts, who would devote the experience they had gained, to the task of keeping inexperienced men from sinking good money into precarious ventures, led to the establishment of the profession of "clay works engineers" and among them, none enjoys a better reputation for knowledge, skill and judgment than the Trautwein Engineering Co., with offices at 417 So. Dearborn St., Chicago, Ill.

Not only consulted by prospective clayworkers, they make a specialty of locating trouble and curing it. Thus, many times, the damage done by impractical installation can be eliminated by a practical alteration, long after the plant has been in operation. Frequently, by locating a "leak" in the process of manufacture, they turn a losing proposition into one that pays dividends with commendable regularity.

In addition to the corps of experts and draughtsmen employed by this concern, is the equipment they maintain for the manufacture of everything needed for waste-heat dryer installations—their system being noted for its reliability and economy.

How to Make a Continuous Kiln Pay

SOME VALUABLE SUGGESTIONS OF A PRACTICAL NATURE ON THE CONSTRUCTION OF THIS TYPE BY A DESIGNER AND BUILDER

By William A. Butler

THERE is more in the method of operation than in the construction of continuous tunnel kilns, that makes them profitable, says Mr. Butler, who writes entertainingly and instructively on the endless tunnel type for this issue of "Brick and Clay Record." Mr. Butler is a well-known expert and authority on kilns and burning on the Pacific Coast, and what he says on the subject is worth reading. "Brick and Clay Record" hopes to have more from his pen in the near future.

THE continuous kiln, or perpetual kiln, as it is sometimes called, often referred to as the Hoffman kiln, which implies an endless arched tunnel with holes through the crown, systematically arranged for firing, using small coal or screenings, was the most radical as well as the most economical method of producing a superior grade of common bricks, and it is from this method of burning bricks that the greatest advance in brick-burning, coupled with the greatest economy, is attained.

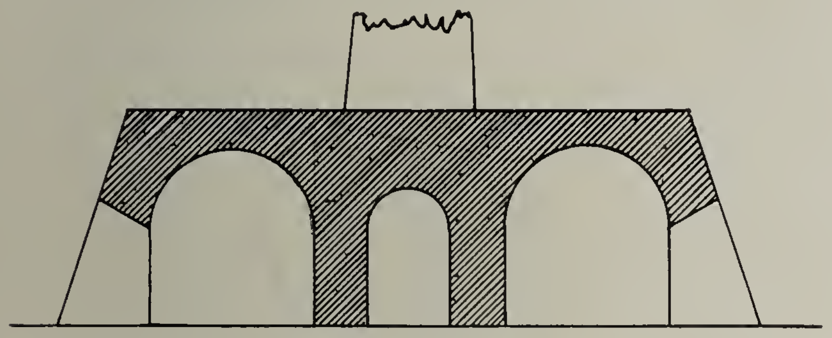


Fig. 1.

The fact that all continuous kilns of the endless tunnel type are constructed a little different from others, no two being built exactly alike, and no two fired exactly alike, yet all giving excellent results in the hands of experienced burners, shows that there is more in the method of operation than in the construction, providing, of course, that the kiln has been built according to the best practice.

In nine out of every ten kilns constructed, it is safe to say that the main draft flue is placed in the center between the two parallel portions of the kiln, as in Fig. 1.

This center tunnel is generally connected to a smokestack or tall chimney or a blower either in the center, as shown in Fig. 2, or is connected to an underground tunnel running to an outside stack or a fan, as shown in Fig. 3.

It has been the experience of the writer that the best method of construction is to have no draft flue on the inside between the tunnels, as in the very best construction there is considerable leakage of heat, especially in the region of the smokestack. To this end the writer recommends the outside underground tunnel, with hood connections, as in Fig. 4, the center wall being as small as is consistent with co-efficient strength to sustain the superincumbent weight and thrust of the arch under heating and cooling conditions.

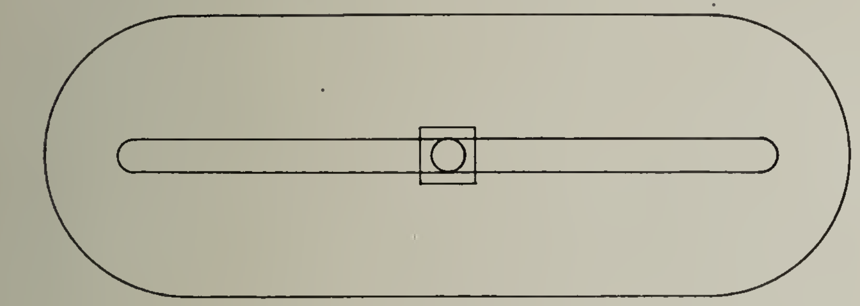


Fig. 2.

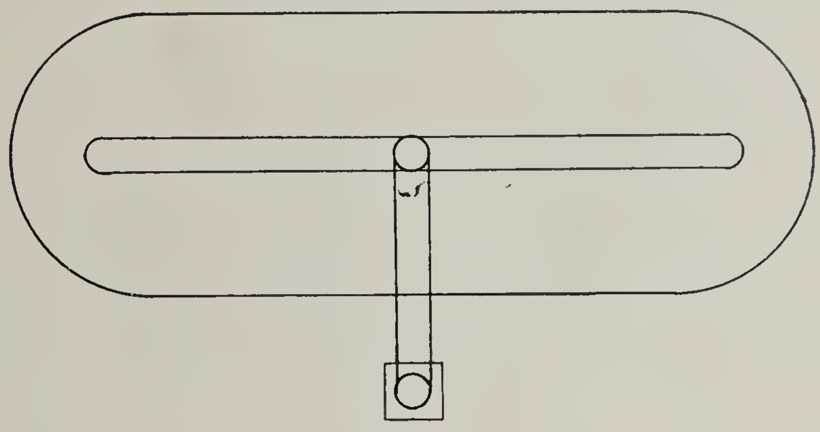


Fig. 3.

The water-smoking flue is placed above the line of thrust, with hood connections for the withdrawal of waste heat from the cooling bricks and delivering the waste heat to the green bricks in advance of the full fire.

With the tall chimney the draft is more or less unsteady, according to the condition of the weather, and the heat from the products of combustion is lost.

With fan draft this heat may be used in the radiation form of tunnel dryer after the fashion of the Buhrer dryer, so much used in Germany. A kiln constructed as outlined above, with a fan and radiation dryer, is 100 per cent more efficient than the already economical Hoffman kiln, for it combines:

First—A continual and constant draft, under absolute control.

Second—Removal of surplus heat, and excellerating combustion, getting more out of the fuel and heating up the kiln more expediently.

Third—Water-smoking and heating up the bricks in advance of the fire, putting them in condition to stand more rapid burning.

Fourth—Complete utilization of all the heat, including the products of combustion, which is continuous for 24 hours in every day.

Fifth—Entirely eliminating the possibility of leakage of heat; therefore, most rapid method of burning bricks to maximum efficiency with a minimum of fuel.

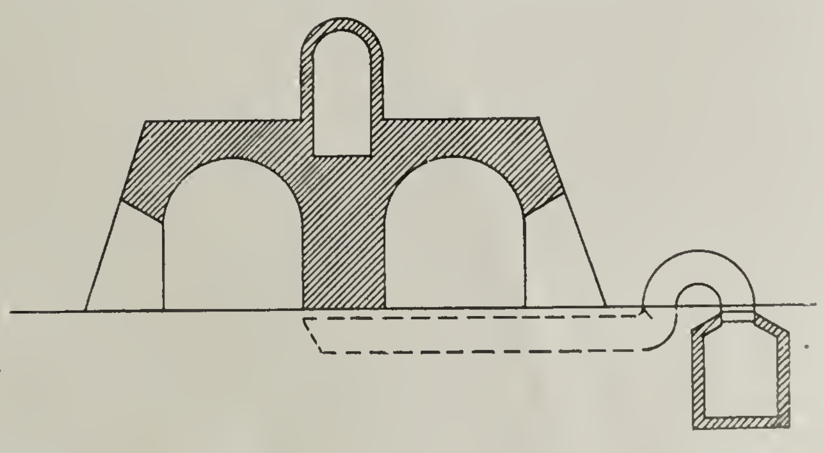


Fig. 4.

A New Feeder
For the Dry Pan

MACHINERY CONCERN ANNOUNCES INVENTION TO CUT LABOR BILLS AND ALSO INCREASE EFFICIENCY

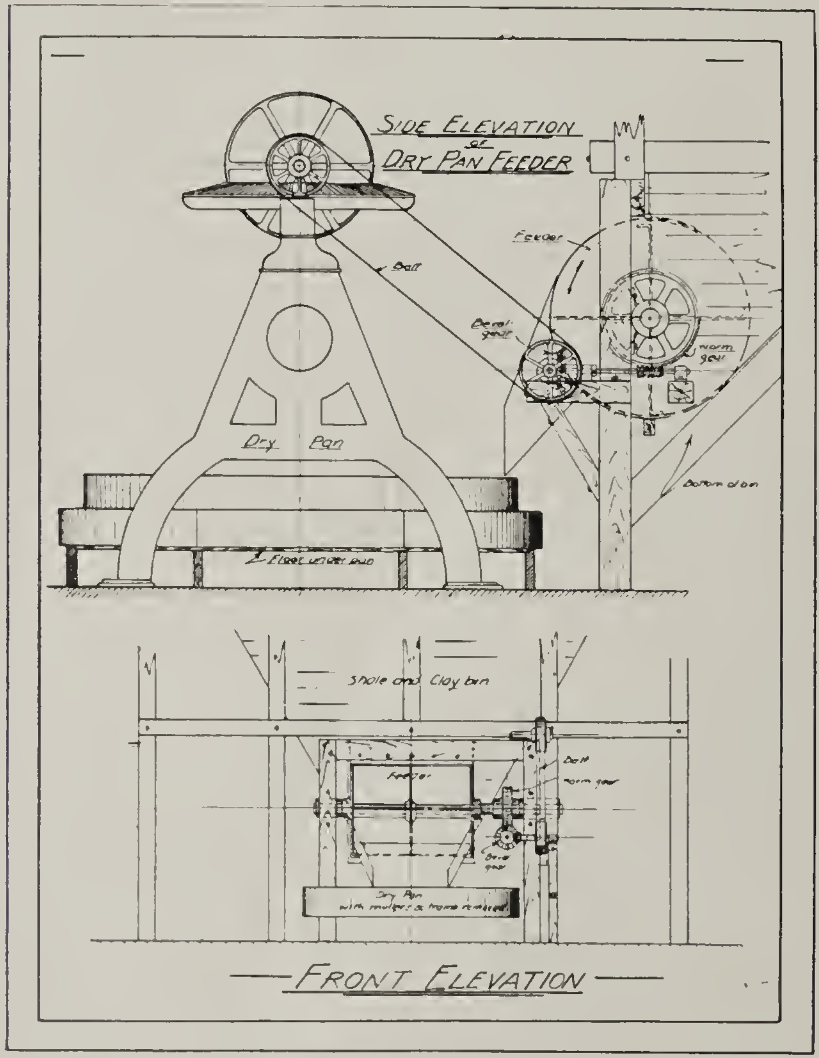
By G. E. Luce

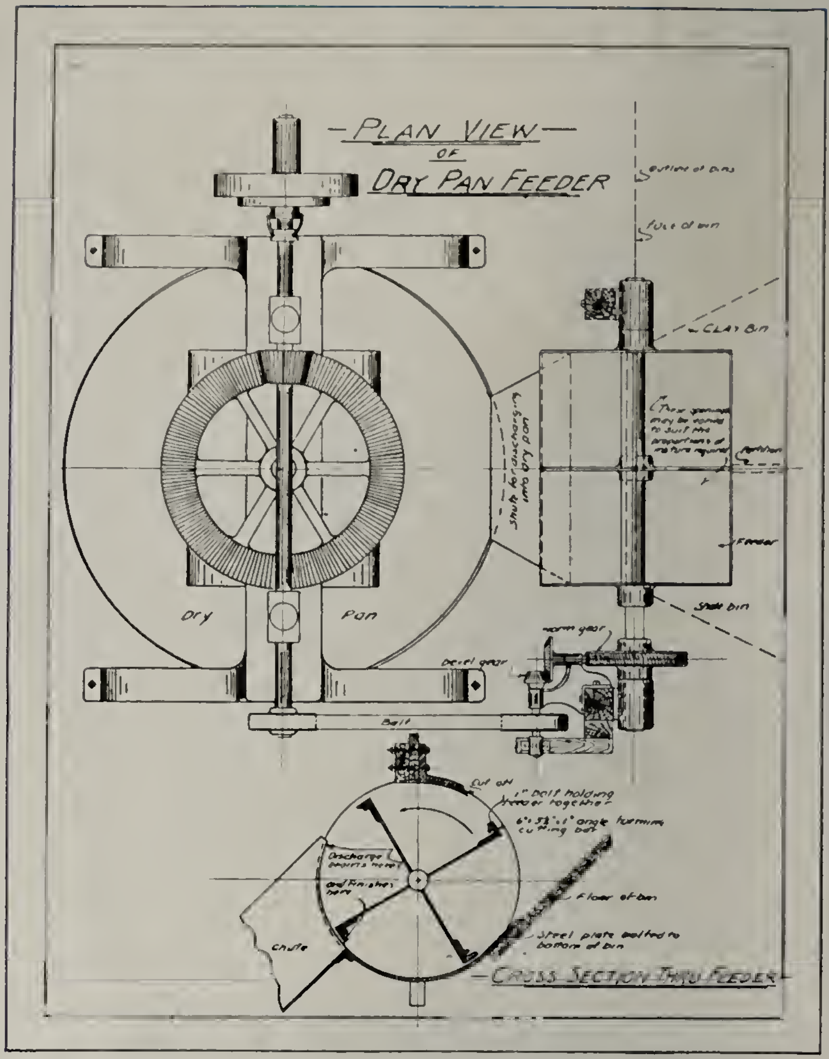
ONE of the latest offerings to the claymaker by the brick machinery men is the Duplex Clay and Shale Feeder for dry pans just placed on the market after exhaustive tests by the Chicago Brick Machinery Co. The industry has long demanded some labor-saving machine that would keep up a steady and uniform feed for the dry pan, and the more progressive manufacturers have been unusually impatient with their demands.

When the Clay Products Co., of Brazil, Ind., lost its plant by fire less than a year ago and decided to rebuild, plans for a thoroughly modern equipment were made. One of the demands of the engineer who designed the plant was for a dry pan feeder. He pointed out that nearly $8,000 a year could be saved in labor alone. There were no such machines on the market, however, but one was adapted from the iron ore industry, installed and put into use. It has worked with a great deal of success.

It remained, however, for the Chicago Brick Machinery Co. to bring out a feeder especially designed for the clay plant and the illustrations accompanying this article give a fair idea of its lines. One cut shows a side elevation of a nine-foot dry pan with feeder in position, and the other a ground plan of pan and detail of feeder.

With this feeder, clay and shale can be fed to pan in any desired proportions with a steady and uniform feed, saving wear and tear on pan, saving in power by equalizing the load, saving in labor, and performing the work better than hand feeding. One man easily can feed three pans when they are located in the usual manner.




PLAN VIEW OF DRY PAN FEEDER
outline of bins
face of bin
Clay bin
These openings may be varied to suit the proportions of mixture required
Partition
Feeder
Shale bin
Chute for discharging into dry pan
Dry
Pan
worm gear
bevel gear
Belt
Cut off
1" bolt holding feeder together
angle forming cutting bar
Discharge begins here
and finishes here
Chute
Floor of bin
Steel plate bolted to bottom of bin
CROSS SECTION THRU FEEDER

The illustrations show the feeder with two compartments, by which clay and shale can be simultaneously fed to dry pan in any desired proportions. It is also built single where only one kind of material is to be fed. It can be used to feed any crusher or pulverizer, or may be used to feed ground clay or shale to pug-mill.

The feeder can be operated at any desired speed to accommodate the amount of material required, and being operated from the dry pan shaft it stops and starts with the pan. It has been carefully designed for strength and simplicity and can be easily and cheaply repaired.

WORKS ANY CLAY THAT WILL MAKE BRICK.

Williams Patent Crusher and Pulverizer a Boon to Clayworkers.

Manufactured and licensed under ninety-seven separate and distinct patents, the Williams Crusher and Pulverizer will grind clay and shale direct from the bank at all times, without choking up. The hammers are adjustable and the position of the grinding plates may be changed at will, and while the machine is in motion, thus assuring that changes may be made without any stoppage of the prepared clay supply. The machine is steam-jacketed both front and back, including the hopper, top and bottom of the machine. It has been successfully used by many clay plants, and a list of those nearest the plant of any clayworker who is interested in perfect and economical clay preparation will be furnished by the makers—the Williams Patent Crusher and Pulverizer Co., of St. Louis, Mo. The concern also maintains offices in the Old Colony Building, Chicago, and in the Monadnock Bldg., San Francisco, Cal.

Taking a Post-Graduate Course in Machinery

By

Cyril S. Linder

Cyril S. Linder.

THIS article, specially written by Mr. Linder for "Brick and Clay Record," relates the personal experiences of a young ceramic student in a post-graduate course, and aside from proving an intensely interesting and highly entertaining narrative, reveals the existence of such a course and brings to light one of the many commendable phases of an exceptionally estimable character in the brick machinery field.

Recognizing the value of practice as well as theory, C. W. Raymond of the Raymond Company, of Dayton, Ohio, conceived the idea of offering the ceramist students of the Nation an opportunity of studying machinery where machinery is made and inaugurated the course outlined by Mr. Linder in this article. With true philanthropy no entrance or tuition fees were charged and the students were accepted in the factory training on the same basis as other wage earners in the same work.

This liberal proposition was placed before the several schools and Mr. Linder was the first student to avail himself of the course.

That the course is an exceptionally valuable one to the young ceramist is proved by the experience of the first class. Unquestionably a larger number of students will avail themselves of the opportunities presented in the year to come.

It was in accordance with that golden rule of industrial success in development which says, "Theory and practice should go hand in hand," that I accepted the opportunity offered by C. W. Raymond of the C. W. Raymond Co., Dayton, Ohio, to study the manufacturing of clay-working machinery in the Raymond shops. It must have been this same rule in the first place, that had actuated Mr. Raymond to his far-sighted "progressive" plan for giving the young ceramic students of our colleges a first-hand opportunity to acquaint themselves in a practical way with the machine branch of the clay-working industry.

To Mr. Raymond go the honors of introducing into the clay-working machinery manufacturer's world the plan of co-operation between the theory-crammed ceramic student and the hard-headed work-a-day machinist, for mutual benefit. However, my experience shows me that the benefit is practically all on my side, but do not let that reflect any on the value of the plan.

As presented, Mr. Raymond's offer was very broad in its outlined work, and liberal in its conditions, as will be seen from the following practical course given in the Raymond correspondence:

Foundry.

1. Selection and weighing raw material from yard as per predetermined analysis.
2. The charging of cupola.
3. The operating of the electric crane.
4. Molding of the more important parts of the product with the iron mixtures such as augers, knives, etc.
5. Inspection of castings.

Machine Shop.

1. Inspecting and routing castings from foundry.
2. Erecting dry pans.
3. Erecting pug mills.
4. Erecting brick machines.
5. Assembling represses.
6. Assembling automatic cutters.

Die Department.

Making, assembling and finishing brick machine and repress dies and cutting-table plattens.

The course also outlined some advanced work in clay testing and field work, but as I did not stay long enough to enter into this we will not consider it.

The conditions under which we took up the course were:

"Pay will be the same as that of the mechanic doing the work,........"

"No agreement whereby you have to stay a certain length of time, you being allowed to quit whenever you can secure a position to your better advantage. Should you prove to have insufficient ability to handle the work, we could not retain you on our payroll."

A more valuable and generous training could not have been offered. However, the actual course of the work was not quite identical with the outline, as might be ex-

Main Building, C. W. Raymond Co.'s Shop, Dayton, Ohio.

pected when one considers that it was an unprecedented attempt and must include the many diverging necessities of business. Within a few years Mr. Raymond should be able, however, to offer ceramic students such a valuable training course in this so very necessary and essential branch of the industry, that it would be practically an expediency and almost compulsory to take it up.

My experiences at the C. W. Raymond Co.'s factory, as the first student to take a year's work under the training course conditions, are, I think, of sufficient interest to relate for the enjoyment and information they may afford to our ever increasing group of ceramic engineering students. It must be born in mind that I was the first student attempting a course of work which had never been essayed before. Incidences were, accordingly unique, at times, but all were profitable lessons, even if not listed on the outline.

An introductory talk with Mr. Raymond on the first morning after my arrival in Dayton, proved interesting, and I found in the company's president a broad-minded, far-sighted, progressive business man, just such a man as one would find introducing or furthering new projects or plans of industrial development. In the course of our talk Mr. Raymond placed special emphasis on the necessity, as he had found it, of brick plant superintendents knowing their machinery and being able to make temporary repairs. This was one of the reasons for the existence of the course.

The rest of the morning was spent with the company's local salesman in making an extended inspection of the factory buildings. As we passed from one department to another the salesman's easy flow of explanatory language brought to me the startling realization of how appallingly deficient I was in knowledge regarding clay-working machinery. I could only simulate a wise countenance and murmur "yes" or "no" at, as I hoped, the right moments, while all the time I was thinking, "cheer up, old top, a year from now and you'll know as much."

The following morning I was turned over to the tender mercies of the superintendent, who was to take direct charge of the training course.

My work started, as per outline, in the foundry where I was made assistant core-maker. The title was nice in speech, but as there were only two of us in the core-room it had no glory attached. Although I had taken the foundry course at my state university I found, to my surprise, that there was yet a great deal to learn about core-making. And that was not to be my last surprise either. Surprises kept coming right along up to the last day. The core-maker had studied his trade while "touring" the country and had thus assimilated a vast number of tricks and turns for getting out cores faster and better than the average, and these he took a keen delight in teaching to me. The three weeks I spent in the core-room, although not included in the course, I found very interesting.

My next assignment was to the pig-iron pile, which I learned very respectfully to hate in the short lapse of one hour and fifteen minutes, but to the uncomfortably close proximity of which I was kept for six long weeks. By this time two more men had entered in the course, one from an eastern college and the other from a middle western university. Both were ceramic graduates. The three of us formed the now famous "pig-iron squad," notorious for the hard work put in and the small results obtained. We readily learned the distinction between light and heavy pigs of iron, and the advisability of lifting the light in preference to the heavy.

A sketch of an average day's work might prove interesting. We started the day with a general cleaning up of all scrap-iron in or around the foundry and brought this by means of a truck up to the cupola charging floor in readiness for mixing in with the afternoon's charge. Next, we would hunt the coke pile located some two hundred yards off. This distance always seemed to stretch out into a mile and to incline upward for us on our return trip.

Having transferred a sufficiency of coke from this distant point to the charging floor we turned our attention to the pig-iron, which, in its turn, also had to be moved from the various points in the yard to the cupola. All means of locomotion and transfer were supplied by us in person, and it was by a unanimous vote that the pig-iron shift was voted the prize job—the job guaranteed to put back-bone and muscle into any frame, to reduce all fat to a mere shadow and to make the most pious swear.

In the afternoon we charged the cupola, a fast and strenuous sport that took pretty near all we had to keep up with the seasoned foundry helpers. I can not help but wonder yet how we three students, fresh from college, ever stood up under the grind of that foundry work. Following the charging we had a few minutes' respite waiting for the first tap of the cupola, and then we were busy again, shifting weights on the smaller molds. It was like stradling purgatory with your nose in a gas explosion, and your eyes in a dust storm, and with the devil behind you roaring, "Don't crush that mold!", or "Better not shift that weight yet," or more cheerfully offering, "Your overalls are burning up." The terrific heat, horrible gases and suffocating dust all joined hands in making a grand climax to the day's work.

An order to change to molder's-helper was very welcome, and I took up the inside work in the damp, cool molding sand with considerable relief. Here we had the opportunity of studying the practical side of molding and to compare it with our college theories of foundry practice, and I might add that on the average they dovetailed quite nicely. As helper I came in touch with most of the big molders and through them learned much on many subjects besides molding. Discussions on socialism, tobacco-chewing, or tomato growing were not beyond our ken. That there were so many well-read and big-hearted men in this trade surprised me and I learned to respect the men of this branch of the world's producers.

My term in the foundry was concluded by a three-week's stay in the cupola room as helper. Here the herculean negro tender initiated me into the secrets of ladle-daubing, cupola-lining and wheel-barrow pushing. That there was so much to be figured out, watched for, and done about a cupola was another surprise to me.

I found the work in the foundry to be, on the whole, very enlightening and interesting, but in my opinion it did not turn out a direct value in connection with ceramics. I found occasion one day to ask Mr. Raymond what his idea was in sending us through the foundry, and he replied that it was a means, on the one hand, to take the college graduation "polish" off us students, and to "break us in," and, on the other hand, to acquaint us with the methods of molding and the composition of the more important castings. The idea was, without a doubt, very good when a view of thoroughness is in mind, but considering the short time to be spent with the concern I would say it was hardly worth while.

My work in the machine shop began in the heavy machine-erecting department, where I was placed under the care of a little good-hearted Bavarian. As Hans was unable to speak English I was forced to brush up on my college German with the result that before long I was able to read almost fluently the German ceramic books I had obtained. This I counted a distinct gain.

Charles W. Raymond, Vice-President of the C. W. Raymond Co.

In this department I found myself astonished again and again, at the complications involved in the simple appearing machines, but under the guidance of the patient Hans and the foreman I soon managed to grasp the methods and operations used in erecting and running of the many machines we handled. Together we built wet and dry pans in all standard sizes, pug mills and soft mud machines, tinkered on auger or stiff mud machines and mold-sanders, and also found time to consider roll crushers and disintegrators.

It cannot be denied that knowledge of the erecting of any machine is the best whereon to build your working knowledge and that is just what we got, due thanks to Hans and the other men we worked with. In Hans we had patience personified, for he was always more than willing to explain any doubtful points, and help in the difficult corners, and also to offer on each and every occasion the consoling information of the undesirability of cracking my fingers with the hammer, or of placing them under falling castings.

In due time I was transferred to the experimental department, where I came into intimate contact with two high-class machinists and a far more accurate grade of work than I had hitherto handled. The superintendent had just completed plans for a new style of automatic cutting table and this we now set to work on. It was the now famous "Mobile No. 4" and I had the honor and satisfaction of helping to build the first one of its kind. My work in this department I found to be by far the most valuable and interesting of the whole course and it was made particularly so by the man who had charge of the department. A machinist of the first class, a repair man of wide field experience, and an enthusiastic supporter and friend of us students he took special pains to give us a training that would be invaluable. And not only he, but all the men with whom we came in contact, seemed to have the greatest interest in us and desire to help.

In our department we had a medium sized auger machine, an automatic cutting table and a repress arranged in proper relation with a series of elevators and conveying belts to enable us to make demonstration or experimental runs as under actual field conditions. These runs brought before us the troubles always incidental to brick machinery in the field and their solution, and also gave us the opportunity of asking an infinite number of questions. A pleasant side of this questioning was the requirement of the "boss" that we study out the answers ourselves. And I might add that there was a good deal of thinking done at times.

I found that it was not only brick machinery that I was going to know, but also in a general way, the theories of machinery, the methods of attacking problems and troubles, the way to handle a job in erecting a machine, and an endless number of details, which prove so valuable at the most unexpected moments. I had entered the C. W. Raymond shops practically ignorant in mechanics and machinery, but with this year's work back of me I feel that I now have a fair amount of discernment in things machinery. That a ceramic engineering student should consider himself fully fitted for a brick plant without a course of machine work such as we received at the C. W. Raymond shops I can not conceive possible today.

But even in the shops Mr. Raymond's plan for our training did not stop. At the end of our first six months he opened a series of weekly lectures for our particular benefit, these lectures covering a wide ground in the ceramic industry. One group of lectures concerned the construction and management of the principal clay-working machines used, another included the methods and difficulties of drying of clay wares and yet another group concerned itself only with the theory and practice of the continuous kilns and the gas-producers associated. These lectures were delivered by the company's experts in the respective subjects and their wide experience and deep study of their subjects made them particularly authorative in their statements. These lectures were more than formal discourses, they were congenial gatherings of a decided social nature, and the evenings' atmosphere of erudite learning were always diluted to a pleasant percentage, with mutual interest and enjoyment, which sometimes would show itself in the way of a general exchange of business and college anecdotes.

The many friends that I found and the fact that I was learning and earning at the same time made my year's stay with the C. W. Raymond Co. one of greatest value and pleasure, and I feel that Mr. Raymond should be most highly complimented on his generosity and foresight in inaugurating this course of training for ceramic students.

INSTALLS ANDERSON CABLE CONVEYOR.

Decorah, Iowa Brickmaker Purchases Duplicate Equipment.

John Heim, of Decorah, Iowa, is installing another Anderson Patent Brick Cable Conveyor, in his yard, duplicating the equipment he purchased three years ago. This conveyor is made by the Marinette Iron Works of Marinette, Wis., and very interesting data may be secured by writing C. J. Anderson, the proprietor. Shipments are being made by the same concern, of two conveyors for use in two yards controlled by the George Frid Brick Co., at Hamilton, Ont.

Installs New Type Continuous Kiln

The Calhoun Brick Company of Calhoun, Ga., recently installed a new type kiln which has proven of great value in fuel economy and labor cost saving. The kiln was built under the Radford patent and can be worked either as a single or double action continuous kiln. The firing is done both at the top and the bottom. J. D. Sloan, vice president of the Calhoun company, in writing to this journal and describing the installation, says: "The kiln is turning out all hard brick with about one-fourth the fuel cost of our open top kilns. I have had experience with a number of different kinds of kilns but I have never seen one to equal this in fuel and labor-saving cost, at the same time getting a beautiful, uniform all hard-burned brick."

"Brick and Clay Record" regrets it is unable to give a more extended description of the Radford principle, but hopes in a subsequent issue to do so.

Callaway Calls Self Brickologist.

The Ed. H. Callaway Engineering Co., in announcing the removal of its offices from 50 Church Street, New York, to the Woolworth Building in the same city, alludes to itself as "Engineers, Clay Specialists and Brickologists." That last is a good word.

Oklahoma Plant Remodeled.

The Gaither (Okla.) Brick Company, formerly the Okmulgee Coal & Brick Co., will start business July 15 with a reconstructed plant, modernly equipped and under entirely new management.

Settling the Question of Fuel

By
W. E. Kirkpatrick

BEING A PRACTICAL COMPARISON OF THE METHODS OF CONSUMPTION IN USE IN CLAY PLANTS AND A DESCRIPTION OF THOSE USED BY OTHER INDUSTRIES

ENGINEER SUGGESTS GROUP OF CLAY-WORKERS, LIKE HUDSON RIVER PLANT-OWNERS, ECONOMIZE IN ERECTING A LARGE CENTRAL GAS-PRODUCER PLANT

WITH no other industry, it is said, is there so little advancement shown in manufacturing efficiency as in the clay product field. Clay-workers are disposed to "let well-enough alone" and, as a result, inventive minds find little encouragement and efficiency experts receive small inducement to suggest innovations that will lessen cost of production and improve quality of product.

In other industries, particularly those which show the most rapid progress, this condition does not exist. Mr. Kirkpatrick, a recognized expert on fuel economy, and who has made a special study of the gas-producer plant, as installed in the steel mills, writes entertainingly on this interesting subject.

Mr. Kirkpatrick proposes a revolution in fuel consumption methods, so far as it pertains to the clayworker, advocating a community gas-producer plant in such localities as the Haverstraw district, New York. His idea is new, only as applied to the clay plant, for commercial lighting and power companies have been employing the system with success for years.

PERHAPS the greatest waste in natural resources today is the waste of fuel, whether in the form of wood, coal, oil or natural gas. I saw 20 or 25 years ago, in the natural gas districts of Pennsylvania, Ohio and Indiana, free-flowing gas burn day and night, year in and year out, with apparently no thought given to its effect on the future. I also saw many thousands and hundreds of thousands of gallons of oil flowing down the streams like water. In a few years the owners realized their mistake. Just across the Indiana line, however, Illinois opened up the Robison fields and everybody made the same mistake a few years later. Texas, Oklahoma, Kansas, and California, following with their discovery of oil and natural gas, showed the same shameful waste and it appears that the farther west we go the greater was the waste.

The question of conservation of natural resources was never given a thought, and so we still find the willful, wasteful methods employed, and most especially by the clay product manufacturers. At the same time the clayworkers meet privately and in convention and talk of the subject, explaining to one another just how much fuel they are wasting each year. They fail to realize, however, the importance of not only telling each other of their losses, but of organizing as a great manufacturing industry which consumes millions of tons of coal per year, and taking some definite action with regard to working out the most practical and economical method of generating and applying the heat to the product.

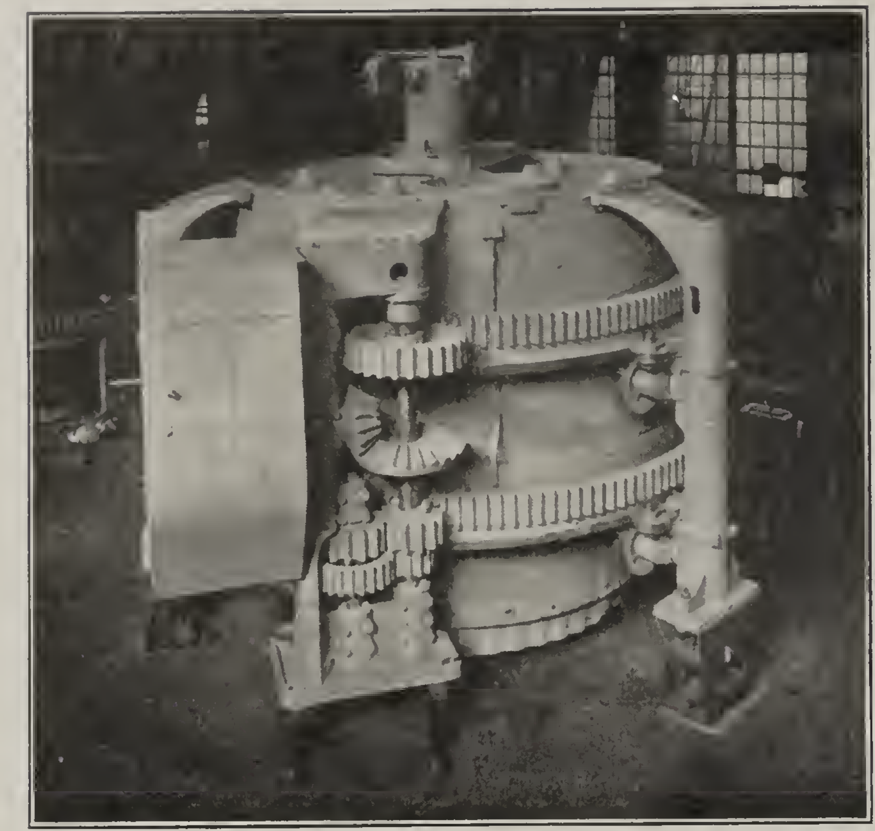
Experts Save Thousands Annually.

Other manufacturers who consume large quantities of heat have expended large sums of money employing scientific men for research work, and the result is the saving of hundreds of thousands of dollars per year.

The steel interests do not consume more heat than the clay product manufacturers, but they receive 50 per cent greater efficiency from coal than the clay product people.

The cement manufacturers do not require a higher temperature than a great many of our clay product manufacturers, but they employ methods which give them almost complete combustion and apply the heat after generation with the minimum of losses, while exactly the reverse method is employed by the clayworker.

It is not only a question of planning for the most economical method of producing heat, but also the most economical method of application, and a method that will permit the highest percentage of heat as generated to be actually consumed in the burning of the product.



A Rotary Gas Producer Which Will Gasify 2,000 Lbs. of 13,000 B. T. U. Coal at 70 Per Cent Efficiency, or Producing Sufficient Gas to Burn 16,000 Chicago Brick Per Hour.

The clay product manufacturers in their recent national convention, I understand, considered the question of advertising clay products and educating the public to the use of their products for economical reasons. That was an excellent idea and should be pushed in the most progressive way and the manufacturers, as an organization, should pay for it. It is unreasonable to suppose too, that any one manufacturer could afford to employ scientific men to work out economical methods for burning clay products, when all manufacturers alike would benefit by the result in proportion to the production of his plant.

It is just as important to the consumer that you produce your product economically as it is to you, because he would and should be benefited by the result. The consumer should receive a better product at a less price, giving you a better plant operating on a more profitable basis, increasing your sales because of the fact that you supply the consumer with a good product at a minimum price.

For years the steel industry produced its coke in plants which lost all of the by-product. Today it installs large plants for the purpose of producing greater efficiency and therefore it erects coke-oven B-P plants, through which all of the fuel is passed, producing a better quality and greater quantity of coke per ton. In addition to the coke, the plant produces certain quantities of tar and ammonia, and at the same time generating large quantities of coke-oven gas which is properly cleaned and runs from 600 to 700 B. T. U. per cubic foot.

The great demand for coke has kept the price rising but usually the price is controlled by the steel market to a great extent. Should, however, the question of domestic coke be given the proper thought and attention it would result in especially built furnaces for the burning of coke instead of coal in all homes, in the heating of all buildings and it would result in economy and put an end to the smoke nuisance in all cities.

Shows Economy of Proposition.

It must not be understood that I suggest coke-oven B. P. for all clay product plants, but should the idea be adopted by some of our large producers of brick and consumers of coal, they would make a wonderful saving. As an example, I will assume that Smith & Co. consume $350,000 worth of fuel, producing from 150,000,000 to 200,000,000 paving brick per year. Smith & Co. could contract with one of several coke-oven B-P plant builders who would undertake to erect a plant for, say, $900,000, and guarantee the plant will produce a certain quantity of coke per ton of a certain kind of coal, a certain quantity of tar and a certain quantity of ammonia sulphate, and that the plant will have a daily capacity of so many tons, and that in the process it will guarantee the plant to produce so many cubic feet of gas, running from 500 to 650 B. T. U. per cubic foot.

In addition to this a contract may be made with a responsible party who will purchase the entire production of by-products, thereby guaranteeing the proposition.

It is found in this process that for the consumption of about the fuel required to burn such a quantity of paving brick the by-product will pay for the fuel, entire operating expense, the interest, depreciation, taxes and insurance, giving off a sufficient amount of high quality illuminating gas free, to burn all the brick produced, and generate all of the power.

This can be shown to be a fact at any time by actual operation. The system has been employed by the steel mills for several years, and recently commercial gas companies have employed the same process and pipe the gas from ten to twenty miles, the quality of this gas, which is a fixed gas, permitting it to be piped any distance and storing in holders.

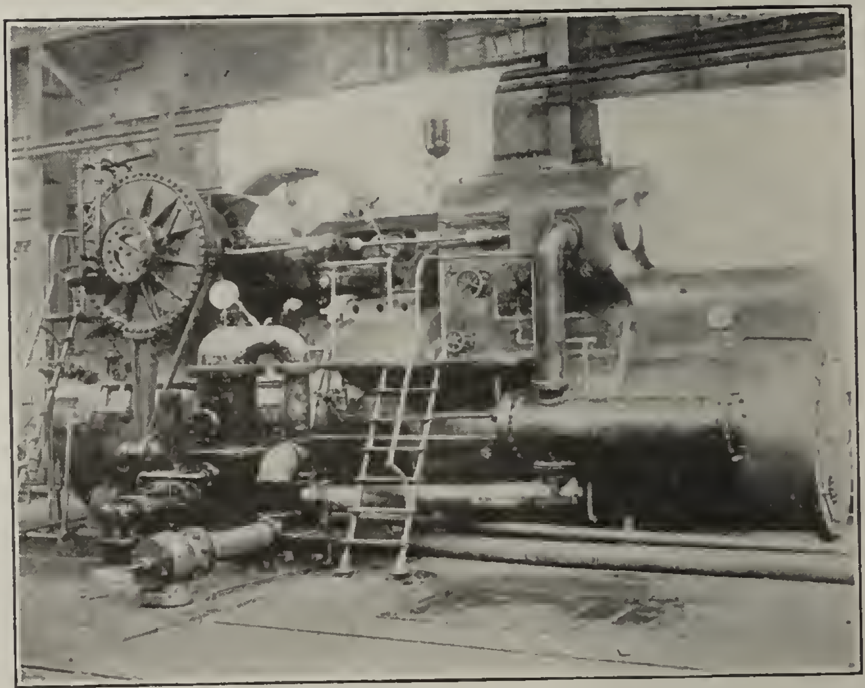
I have often thought the manufacturers in the Haverstraw district on the Hudson river, New York, where there are from 80 to 90 plants in a distance of from 20 to 30 miles, could most economically adopt this method. They could erect, say, two plants—one on each side of the river near the center of the district and install service lines, covering the entire area, and thereby obtain their fuel in a most economical way.

In applying this gas, it would be done in the same manner as natural gas and it would not be found necessary to change the furnace or kiln construction in any manner. I should recommend the installation with complete air service line, giving the operator the advantage of perfect fuel and air regulation, which means control on one hand and great economy on the other.

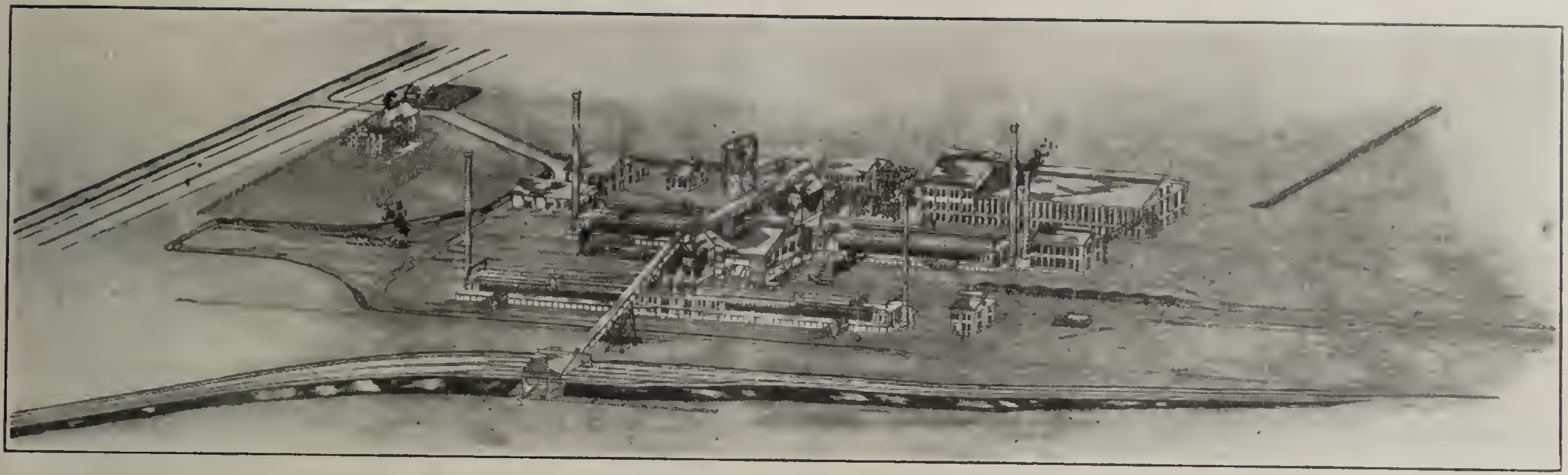
The air would of course be under pressure and handled by positive blowers.

Clay Workers Fail to See Full Principle.

The clay product manufacturers apparently fail to realize



Locomotive Type of Steam-Generating Set.



A By-Product Coke Oven Plant at Corey, Ala.

the importance of perfect control of the carbon and air, yet we know that to shut off the air means the fire will smother, even though there is plenty of coal. We know, also, that a gas or gasoline burner on a kitchen range will not give good results unless the air is properly regulated.

If it is reasonable for gasified carbon (gas) to have a measured quantity of air per quantity of carbon then why is it not just as reasonable that solid carbon (coal) should have a measured quantity of air to a certain measured quantity of carbon?

All direct coal-firing is found to result in great loss of efficiency because you cannot control the oxygen, or the carbon. It certainly is hard enough to burn solid fuel in a boiler furnace or continuous kiln where you have some system of control and where you have dampers for regulation, but still 90 per cent of the boiler furnaces are uneconomical and run far below 50 per cent efficiency.

In some of our large plants I find from five to twenty men handling the fuel, which is not only expensive on the account of labor but results in great losses, while with washed producer gas two men can handle all the fuel required and the distribution is efficient even though the kiln, furnace or engine is 5,000 feet away.

The question of applying producer gas to the burning of clay product, also for power, has been discussed and tried. More or less success has accompanied the trial, but there is great room for improvement. The present method of applying producer gas is by the use of expensive regenerative kilns, which almost make it prohibitive for the average manufacturer to supply the necessary capital with which to pay for the installation. I have personally purchased the material and contracted for the labor for one or more of these kilns and know exactly what they cost, and until some method of applying producer gas has been developed which will materially reduce the first cost, it will never be universally used.

Under the present or regenerative system, raw producer gas is used, making it necessary to control the gas by suction. This gas leaves the producer at a temperature of from 800 to 1,200 degrees Fahrenheit, and it has always been considered good practice to use the gas raw, or hot, heavy-laden with tar and sulphur, and thereby save the sensible heat. However, that is a question unanswered.

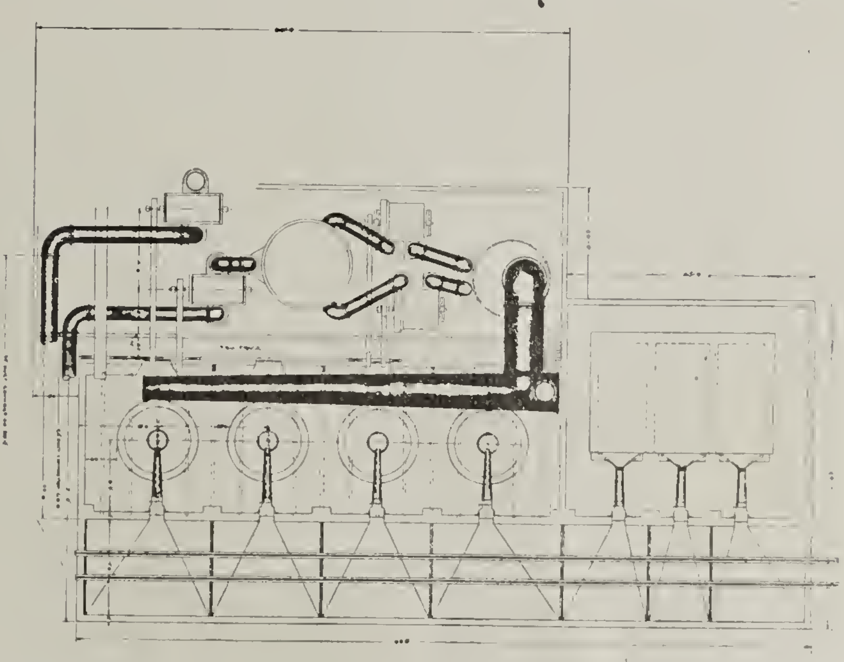
Must Control Both Air and Gas.

The greatest of economy cannot result unless you have perfect control of the air and gas, and thus permit regulation of both with values and thereby get complete combustion. As a matter of fact, it is quite impossible to accurately control gas while hot or air by induction. Then, again, I have seen large vitrified brick-lined ducts fill half full of tar and soot between the producers and the kiln. I have seen valves in the gas distributing chamber and up-takes clog, and when burned out, generate sufficient heat to melt the vitrified brick lining, and the cast iron valves.

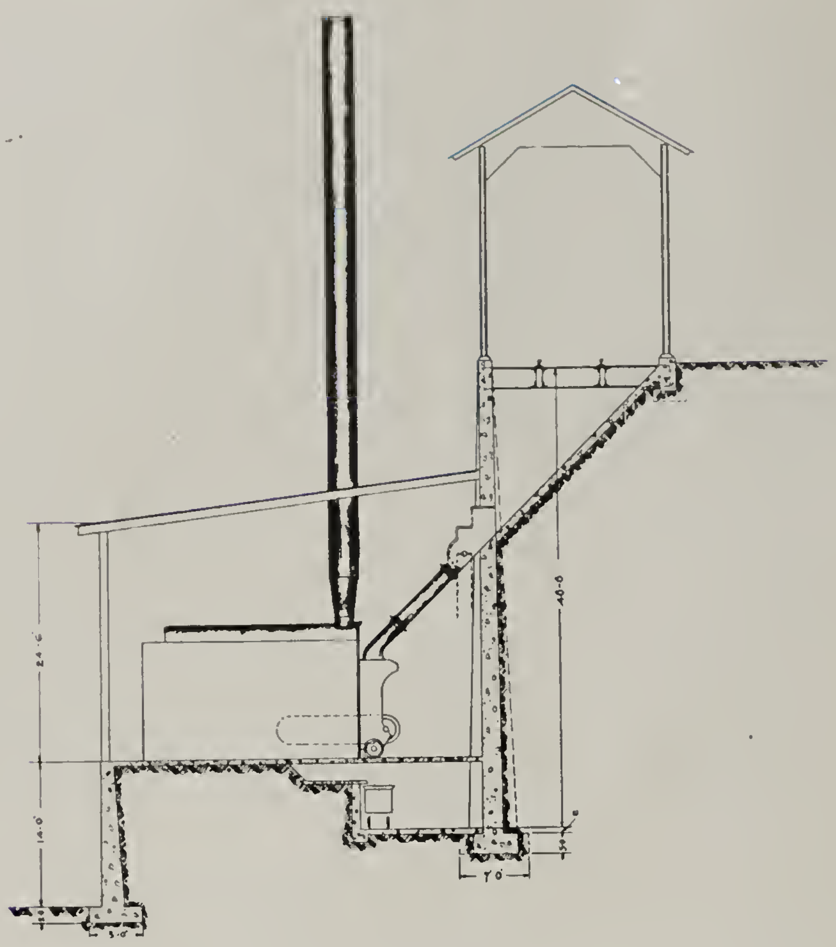
Millions and millions of heat units are generated in the process of burning out the ducts, all of which must be a loss, reducing the efficiency of raw producer gas, and this, added to the loss by reason of imperfect control, gives a great percentage of loss.

Those who can afford regenerative kilns may obtain a higher percentage of efficiency from the fuel as used in the producer but if producer gas can be applied to any type of kiln with economy, such as the round down-draft, then the question of depreciation and interest on investment will make the total cost of burning about equal, and give the small manufacturer an equal chance with his larger brother. The question of washed producer gas always has been kicked aside because those who should know contended it is out of the question, uneconomical, and impossible to raise the high temperatures as desired, but nevertheless someone is mistaken. The steel product people use washed producr gas under pressure and valve control at a minimum temperature in a most efficient manner in plain open furnaces, using air for combustion under the same pressure and valve control and without the regenerative or reverbatory system.

I have seen this gas used in annealing furnaces, tempering furnaces, and in welding and forging furnaces, and the operator was able to change from 900 to 3,000 degrees in a very short time. He regulated his heat as you regulate the speed of an engine and he had perfect control of air and gas because he used ordinary gate valve control and control means perfect combustion and high efficiency. This



Ground Plan of a Washed Producer Gas Plant Showing Four Mechanically Operated Producers With a Maximum Capacity of 600,000 Cubic Ft. of Gas Per Hour.



Cross Section Showing Plant Located in Clay Pit, Using Surface Track for Coal Storage Delivery and Permitting the Use of Gravity in the Handling of All Coal, Also Ashes.

plant also is using gas engines and the manager explains that they give as dependable service as the steam engines.

Increases Output Ten Per Cent.

The process is simple. The plant had been operating on natural gas, testing 1,000 B. T. U. per foot. The application of producer gas was made in the same manner, except air was used under pressure instead of by induction as in the case of natural gas. The astonishing feature was the output of every furnace was actually increased over the natural gas fired, by 10 per cent.

The base of calculation was made in the ordinary common sense way, leaving off all frills, but using the common sixth grade multiplication table. A certain size furnace, using natural gas at 1,000 B. T. U. on a certain pressure, involved the use of a certain quantity of gas at low temperature in a given time. To raise the same temperature with gas at 150 B. T. U. per foot meant the introduction of six and two-thirds times as much gas in a given time. This meant a certain size service pipe, using the gas on a certain pressure together with a certain quantity of air under pressure.

At this plant the gas is thoroughly washed, using a vertical spray, and centrifugal scrubbers. Dry scrubbers are also used and in the five years' total operation not a single service line or valve has been cleaned, and not a single producer repaired and in fact not one dollar has been spent in repairs on the entire plant.

I have noticed from time to time it has been explained that producer gas cannot be economically applied to scoved kilns.

This is entirely an error, and in support of my claim will say plants can be designed, erected and by responsible parties who will guarantee efficiency. I had the pleasure of showing six Chicago brick manufacturers the washed producer gas process and they in one accord declared they could take the same system and burn their brick.

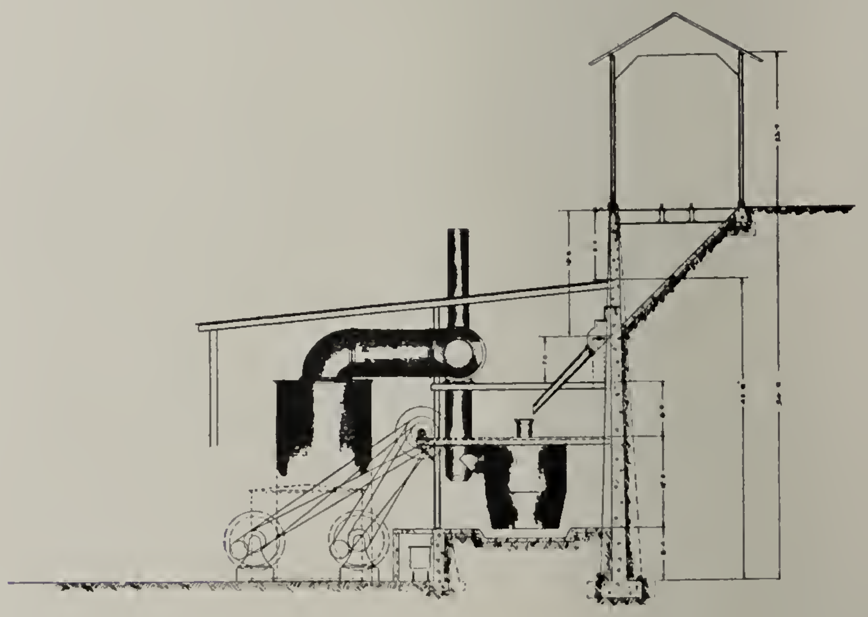
As a matter of fact should the Chicago manufacturers desire they can avail themselves of a combination which will show wonderful results. At present the Bach Brick Co., of Chicago is using a hood over the top of its scoved kilns which covers four or five arches, which is connected to a duct to the dryer and then to the stack. This was installed for the purpose of eliminating the smoke and the system resulted in control of the draft and cut fuel consumption to less than nine gallons of oil per 1,000 brick. The Bach Company burns semi-continuous and advance one arch each sixth hour, burning the product in twenty-four hours. The heat to burn 1,000 brick from nine gallons of oil testing 19,500 B. T. U. at 100 per cent efficiency requires 1,193,000 B. T. U. per 1,000 making a plant of 320,000 per day production, necessitating 381,888,000 B. T. U. to be produced in twenty-four hours and assuming coal contains 131,000 B. T. U. per lb. and the gas plant working on a 70% efficiency basis (which numerous tests show is lost), gives us 9,100 B. T. U. per lb. of coal as used in the producers, or approximately 2,000 lbs. per day. The power and steam required will consume about 8,000 lbs. or a total of 25 tons. With good gas coal at $2.50 per ton, F. O. B. cars Chicago this will give a full cost of less than 20c per 1,000, and a single machine-operated gas-producer will gasify all the coal required to burn 320,000 Chicago brick per day by using in connection with the Bach continuous system.

The hood would cover eight arches containing 40,000 per arch, advancing two arches each sixth hour. The total operating expense, interest, depreciation, taxes and insurance, including fuel, would not exceed 38c per 1,000 brick.

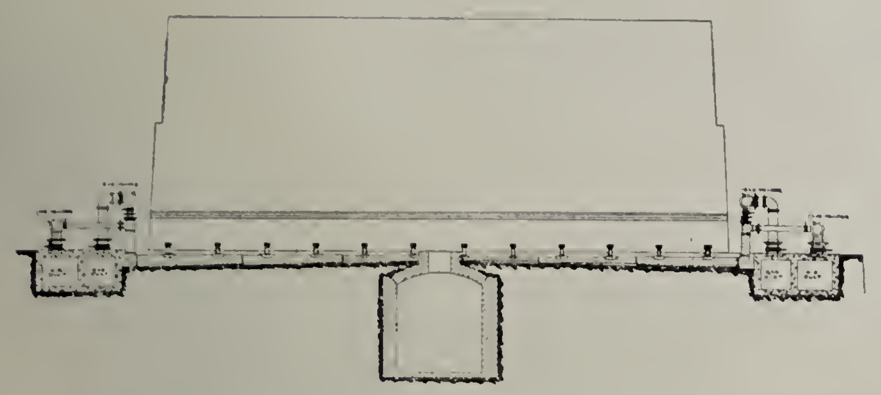
But, by applying washed producer gas, and distributing the gas also air in burners throughout the entire arch area this will result in a still greater economy. This permits a sufficient amount of air to be applied through the center of the arch, to get a complete combustion thereby raising the temperature evenly throughout the entire area of the arch and it also would permit the gas to be entirely shut off continuing the use of the air which is under pressure for completing the process of burning and driving the heat up.

Declares Europeans Solve Power Problem.

Something like one year ago, I noticed an article in a clay journal outlining in detail the economy of electric drives. I have often thought how ridiculous the analysis as given would sound to our European brothers, who have worked out along scientific lines the most efficient, practical and economic method of generating and applying power. As I remember the average coal consumption per H. P. was about 8 lbs. while our friends across the water have succeeded in reducing the fuel consumption in the generation of



Cross Section Through the Boiler Room, Showing Gravity Coal Handling, Stoker and Ash System.



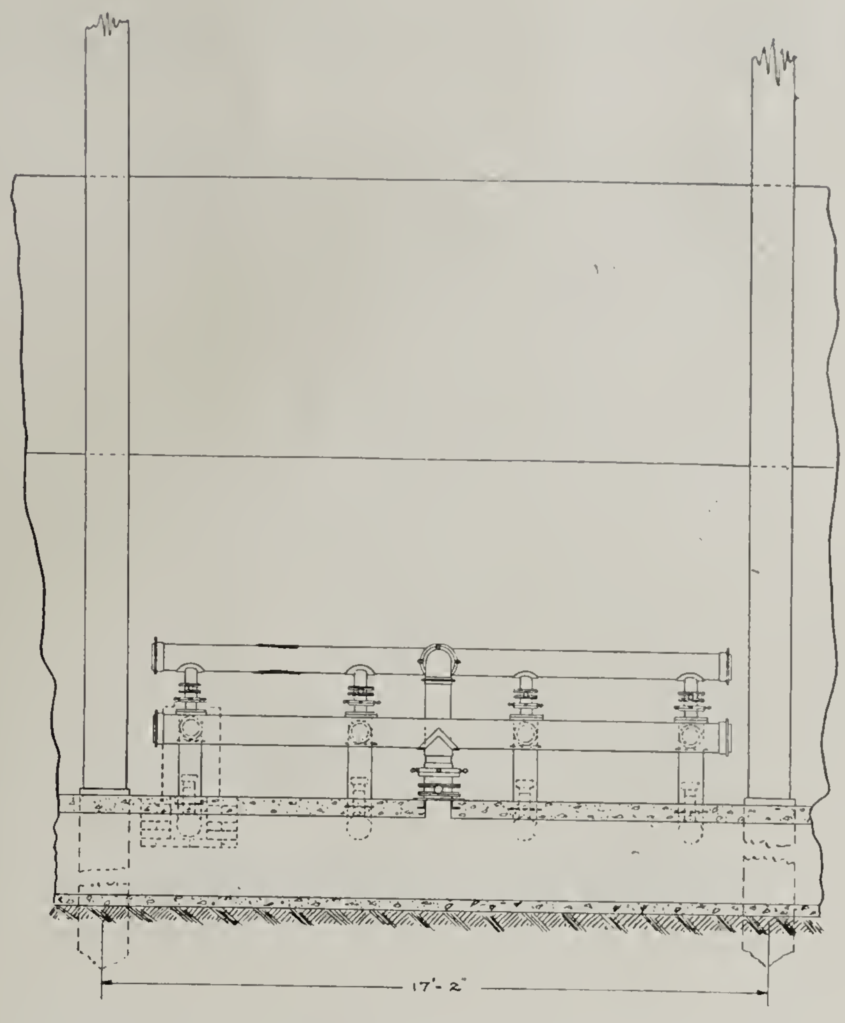
Cross Section Through the Scoved Kilns, Showing the Distribution of Gas and Air Throughout the Entire Arch Area.

power to .97 lbs per H. P. hour, or about on par with Producer gas.

Of the many power equipment builders in our country few have developed the boiler and engine along scientific lines to the point of economy, and those who have adopted the method have purchased the rights from German builders with the possible exception of our American firms who are at this time putting on the market the Locomobile type of boiler and engine which by reason of its construction will result in great economy. This equipment is now operating and producing power for less than 1 75/100 pounds of coal per H. P. hour, using 14,000 B. T. U. coal.

I was walking down the main street in Valley City, N. D., recently and in passing the city electric plant, was surprised to find out in that far away place the famous German Lentz tandem compound engine running so smooth that I never would have made the discovery had the doors to the engine room been closed. I was informed the engine was giving good results at a very low fuel cost. I personally know similar engines are producing power for 2 lbs. of coal per H. P. hour.

But leaving off the steam, we find producer gas engines operating on washed producer gas, giving as dependable results as steam using only 1 lb. of coal per H. P. hour. We can find, of course, engines of this type failing to give results, but that is entirely due to unclean gas, the valves becoming clogged with tar, all of which is a fault of the washing plant and can be remedied, being purely a mechanical defect.



Elevation of Gas and Air Header System. The Gas Capacity of This Plant is Equal to the Amount of Gas Required to Burn 1,280,000 Brick Per Day of 24 Hours if Used in Connection with the Bach Continuous System.

If this is true (and it is, for responsible companies will erect and guarantee the result) then why consume an average of 8 lbs. of coal per H. P. hour when you can get as dependable result with gas at ⅛ the fuel cost also labor cost?

What a wonderful saving in labor would naturally result in the operation of a plant where all the fuel for power, drying and burning is dumped from the railroad cars into a hopper and mechanically deposited in the producers which supply the gas to engine for power without the assistance of a single man, and also supply all the fuel for drying and burning in the same efficient way!

SOLVES PROBLEM IN CLAY-MINE AND PLANT.

Gasoline Motors Replace Time-Honored Mule and His Human Imitator.

Equally efficient and economical in the dark workings of the mine, or in and around the plant, gasoline motors are rapidly replacing the patient but slow-moving mule and the less patient and less intelligent "transfer man" in his monotonous task of pushing cars of green ware from machine to dryer and from dryer to kiln. These motors are the "handy man" on every yard where they are used, taking big tasks without complaint, working with equal celerity in good weather or bad, "speeding up" the entire system of clay manufacture. Manufactured by the George D. Whitcomb Co., of Rochelle, Ill., more than three hundred are in use at the present time, the average being two to a plant. They are made in weights varying from 2½ tons to 16 tons, the haulage capacity being governed, in a large measure, by the weight of the motor. From a fuel-consuming standpoint, these motors are about the most economical adjuncts to a clay manufacturing plant, the h.p. per heat unit being higher than with almost any other form of power.

DEMAND FOR "ARTS AND CRAFTS" BRICK.

Satisfied by Sand Mould Brick, Which, Although Machine Made, Resemble Hand Made Product.

While it is well known that sand-moulded brick are generally made by that process because the particular clay to be worked is of such a nature as to dictate the process named, it is a fact, nevertheless, that sand-moulded brick are in demand for the highest type of brickwork, on account of their similarity to the old, hand-made product of our Revolutionary forbears.

The art of manufacturing this brick has undergone the same changes as have come to other processes of brickmaking, and, like other branches, has several machinery manufacturers specializing on machines and processes that will overcome the cost of hand labor without altering the excellent structure of the product. C. A. Potts & Co., of Indianapolis, Ind., have made a specialty of sand-moulded brick machinery for many years, and offer the clayworker a splendid opportunity of securing the benefit of a long experience, applied to this important branch of the industry.

Pleads for Uniform Product in Brick-Making

ANTON BERG SAYS MODERN MACHINERY MAKES IT POSSIBLE TO MAKE GOOD BRICK AS CHEAP AS POOR BRICK

By Anton Berg

Of the Berg Machinery Company

Mr. Berg argues for the manufacture of high-quality products of a uniform size, maintaining that modern machinery makes it possible to do this as economically as the cheaper and less-desirable material.

Anton Berg.

SHOULD it not be advisable to manufacture and use the best brick for construction, especially in large cities, where good material and good machinery is available? Is it an easy proposition to manufacture brick that will stand 300,000 pounds and upward of crushing strength by the square inch. A brick like this will lay a strong and even wall, and it would, therefore, be safe forever, so far as life and property is concerned.

I have before me two brick frequently used in construction. One stands the crushing-strength tests, while the other does not. It is a question which one of the two should be preferred and recommended for buildings in large cities, and it seems nothing but judicious and right to consider carefully this question and select the best.

We find the brick, which the writer does not consider as the best, fails to reach a crushing strength of 400 pounds to the square inch. Even if this brick was uniform in size and quality, there would be some excuse for recommending it, but it is not, and therefore is much inferior. Therefore, it seems nothing but right that the high-grade, uniform brick should be preferred.

If this lower grade brick was manufactured for less money there would be some excuse to manufacture such a brick for the sake of making money, but on good material, and with properly fitted machinery and kilns, the higher grade mentioned can be manufactured equally as cheap as the lower grade. Would it not, therefore, be the right thing to manufacture and use the highest grade and the best, and not use the lower grade or manufacture it for buildings of any importance?

When the wall is laid, it may be figured as a crushing load. The whole wall will stand a reasonable load, but is the whole wall bearing the load, or is the brick directly under the beam in the building bearing the load alone? It occurs to the writer that the support of the beam only has, at the most, 10x12 support in the wall. At that rate the best and highest crushing strength is certainly very necessary.

I believe the reason why the low grade of brick is manufactured is, that a man with a very small capital can go out in the Spring of the year and get a soft mud brick plant, use scove kilns, and thereby make a so-called brick, and can make money from the manufacture of this product. This, of course, is to the interest of this particular man, but is it to the interest of the man who uses the brick, when brick of a higher crushing load, uniform in size and quality, can be obtained for the same price?

CURES CLAYWORKERS' WORST TROUBLE.

R. H. Precipitated Carbonate of Barytes Prevents Scum Appearing on Brick and Terra Cotta.

No trouble is more annoying, more destructive of value, than "whitewash" or efflorescence on brick and other clay ware. Caused by the presence of soluble salts in the clay or in the water with which the clay is pugged, it defies the most careful preparation, drying and burning, and appears on the finished product, defacing hundreds of otherwise handsome structures, to the detriment of the reputation of the manufacturer, loss of value in the building and lack of prestige in a material that is, aside from this defect, the best building material known.

That this may all be obviated by the use of an easily obtained and not expensive mineral, that acts upon the soluble salts and translates them into insoluble and harmless ingredients of the ware, is well known to many clayworkers. To others, who have labored to overcome difficulties without the aid of R. H. Precipitated Carbonate of Barytes, success is still a closed book, and it is only because they will not see the advantage that will accrue to them through its use, that they do not see it—"there are none so blind as those who will not see." The Roessler & Hasslacher Chemical Co., of 100 William St., New York, has made a specialty of importing this material and serving it to clay working plants for many years. They publish circulars describing its effect upon clay that needs a preparation of this character and giving practical advice as to its proper use. Your duty to yourself and to the markets you are serving would dictate your corresponding with them at the first sign of efflorescence in the ware you are making.

Inventor Describes New Up and Down Draft Kiln Without Fans

By Anton Vogt

Consulting Engineer, E. C. Tecktonius Mfg. Co.

Anton Vogt.

ACCORDING to the claims made by continuous kiln men—the top and side-fired with coal, tunnel kilns, producer gas-fired kilns above ground and built-in-a-hole-in-the-ground types,—which show how little fuel is needed per thousand brick or per ton of hollow clay-ware, the ordinary down-draft kiln has lost some of its reputation for burning clay-ware with economy. The general belief seems to be that the down-draft kiln consumes too much coal—which is true in many cases—but since the up and down-draft kiln which bears my name was introduced, these objections have been overcome. This kiln drives part of the moisture out by practical means of heating the underground flues and the stack, and creates a live draft from the start of the fires without the necessity of running an engine to drive a fan. I venture to say and can prove with the draft gage that a fan used to make the coal burn does not increase the draft in the kiln nor in the stack.

To increase the draft the fan should be at the stack. How do I know? I measured the draft on a kiln that had a fan, making the coal burn more free. I shut off the fan and found that the kiln had the same draft without the fan as with it. That shows that the fan does not increase the draft unless located at the stack. The Vogt kiln has an arrangement at the stack which actually increases the draft, without a fan. In these days of keen competition a kiln must be designed to have sufficient draft when most needed, at the start of the fires, and it must have it without much extra expense. Such a kiln is the "Anton Vogt Up and Down Draft Kiln."

By creating a live draft from the start of the fires the time of water-smoking is reduced and produces cleaner ware. The moisture has no time to condense and form scum on the bottom courses. These bottom courses do not become soft from the moisture given off from the ware above and getting out of shape. It is just as good a kiln as any kiln operated with forced draft and the operating expenses are much less.

The Vogt kiln is so constructed that any kind of clay-ware can be burned in it—brick, tile, hollow ware and salt-glazed sewer pipe. The working plans offered for sale are not kept in stock, blue-print from one tracing, every plan is prepared to suit the clay to be burned and the fuel to be used.

The principle of heat distribution is the same for all ware, however. The side and center draft is arranged to suit the various clays and fuel. Some tender clays need more center draft to get the heat away from the fires, until the kiln is out of danger and heated evenly or the heat is equalized by dampering at the stack and driving the heat to the sides. Other clays, with a wide range between vitrification and fusing, can be burned with less center draft without overburning the sides.

Any kiln, no matter whose design, must be regulated after the first burning. The finest engine made by master mechanics, looking like perfection in mechanism, must be adjusted after running a while. The kiln that does not need regulating and adjusting after the first burning has never and never will be built.

The small flues leading to the main flues in a new kiln may have to be checked and as the flues fill up must be opened to maintain draft. The Vogt kiln is easily cleaned after each burn, without tearing the floor to pieces.

ECONOMIZES ON WATER SUPPLY.

Otis Tubular Feed Water Heater, Oil Separator and Purifier Heats Feed Water With Exhaust Steam.

Where the supply of pure water heated for boiler purposes, is a question that is of vital interest, as it is on many clayworking plants, the Otis Tubular Feed Water Heater, Oil Separator and Purifier will be found to solve the difficulty and prove its value every working day it is in operation.

It is not an experiment, but a tried and trusted appliance that its makers are not afraid to guarantee. They are so sure of its effectiveness that they agree to pay all of the costs of a trial, freight, cartage, piping, etc., and leave it up to clay-plant management whether or not it stays as an asset to the works or is sent back at the makers' expense.

This appliance will heat all of the feed water to the boiling point (210 to 212 degrees F.) with the exhaust steam, without causing any back pressure. It will also extract the oil from the exhaust, so that the exhaust steam, after being passed through the heater, can be used for other heating purposes, and the water of condensation for the heating system be returned to the boiler without the additional expense of an eliminator.

The Metropolitan Life Insurance Company is having plans drawn for the enlargement of its Pacific Coast office at Pine and Stockton streets, San Francisco. Two additional wings will be built, each 22 by 49 ft., Class A, and faced with white matt-glazed terra cotta, like the main building.

Application of Steam Shovels to Clay Plants

FIRST OF SUCCESSFUL MACHINE WAS INSTALLED IN AMERICAN BRICK PLANT THIRTY YEARS AGO BY THE MARION COMPANY

By Arthur F. King

The Marion Steam Shovel Company

MANY years ago when clay products were little in demand, the clay industry was primarily a hand labor proposition. There were few facilities for transportation and in consequence clay plants were only large enough to supply their local demand. That time has passed, however—transportation is better, people are building for future years and clay products are in better demand. The result is that clay plants have a wider territory for distribution and a better market. Modern brick making machinery has enabled manufacturers of clay products to increase their out-put and to lower their production costs. Brick making machinery, however, means increased production of raw clay which, in turn, necessitates more labor in the excavating branch of the industry.

The labor used in digging clay was usually uncertain, unreliable and inefficient, to say nothing of its expensiveness. The motive, therefore, in installing the first steam shovel was the elimination of labor difficulties. The first steam shovel to be installed in an American brick plant was a Marion Style A—1½-yard machine—about thirty years ago. This machine was a great success, the firm who owned it being able to do away with about 40 or 50 men and, at the same time, make a better grade of brick and place them on the market at less money and with more profit. The reducing of production costs led many plants to make similar installations and, in the course of a few years, there were in the neighborhood of 30 machines in the Chicago district alone.

In connection with their eliminating labor difficulties and decreasing cost of production, steam shovels were found to be important factors in producing a better and more uniform brick. In most plants, the clays or shales lie in strata which, if not thoroughly mixed, tend to make the finished product very un-uniform both in texture and in color. There is no really practical method of mixing these strata, except by steam shovel—a method both certain and inexpensive. In making one scoop of the dipper from the bottom to the top of the pit, each stratum is thoroughly mixed with the others and always in the same proportion, thus making an absolutely uniform product. The mixing consumes no time and costs nothing, since it is done automatically as the clay or shale is dug.

Until recent years, the standard railroad type of shovel was the only machine used in the clay industry, but this type, now, is gradually giving way to the revolving shovel. Revolving shovels are divided into two general classes, i. e., small revolving shovels for general excavating and large shovels for use where a high lift and a large capacity are required. The former class is well adapted to many small clay plants whose production does not and would not justify the installation of a larger and more expensive machine. Being self-propelling and mounted either on railroad or traction wheels, these smaller machines are well suited to brick plant use. It takes but one man to operate them and only a very few—one or two—men in the pit. Because of their low first cost and economical up-keep, they place the small brick plant on an equal footing with the larger plants in point of production costs.

The larger revolving shovels are designed especially to meet the requirements of plants having a deep face of clay or shale and a large capacity. When steam shovels were first used in the clay industry, many banks were too high to be handled in one cut; as a result an overhanging mass of clay was left, placing the men and the shovel in constant danger from a cave-in. The recently developed large revolving shovels, however, eliminate this trouble entirely, being capable of making a clean cut up to a height of 70 feet in one operation. The saving effected and the inconvenience avoided by the use of these larger machines is obvious and, when the advantage of high lift is considered together with large capacity, the machines represent the highest degree of efficiency and economy.

N. P. B. M. A. CONVENTION.

Date Set for September 17-18 and Place of Meeting, Cleveland, Ohio.

Within a few days announcements will be sent to all members of the National Paving Brick Manufacturers' Association, covering the coming convention, which will be held in Cleveland, Ohio, September 17th and 18th, 1913.

At the annual meeting of the association, held in Chicago, March 3rd, 4th and 5th, 1912, the Constitution of the N. P. B. M. A. was amended to read:

"This Association shall hold its annual meeting preferably in the month of September in some city, for the election of officers and other constitutional requirements and arrangements for the next ensuing calendar year. The particular time and place for such meeting shall be selected and announced by the Office Committee of said Association thirty (30) days prior to the date selected."

In pursuance of the foregoing, the Office Committee of the N. P. B. M. A., composed of Chas. J. Deckman, J. C. Barbour and C. C. Blair, has selected Cleveland, Ohio, and designated September 17th and 18th as the place and time for holding the annual convention.

In order to carry out complete arrangements for the meeting, the following committees are named:

COMMITTEE ON FINANCE.
Chas. J. Deckman,
J. L. Higley,
John Kline,
H. S. Renkert,
C. C. Blair,
J. R. Zmunt.
COMMITTEE ON PROGRAM.
Will P. Blair,
H. H. MacDonald.
COMMITTEE ON HEADQUARTERS.
Will P. Blair,
J. R. Zmunt.
Spencer M. Duty.
COMMITTEE ON DEMONSTRATION.
Will P. Blair,
Spencer M. Duty,
F. M. Brady.
COMMITTEE ON AUTOMOBILES.
Spencer M. Duty,
F. M. Brady,
J. R. Zmunt.
COMMITTEE ON PRESS.
H. H. MacDonald.
COMMITTEE ON RECEPTION.
H. H. MacDonald and all local
plants within 100 miles.

These committees are expected to act promptly and report their action to the Association Headquarters.

Pulverizers Solve Grinding Problem

DEMAND OF THE TIMES CALLS FOR IMPROVED METHODS IN PREPARING CLAY FOR THE MACHINE

By George C. Vidette

Secretary American Pulverizer Company

ECONOMIC productivity may mean efficiency, and efficiency rating may be determined by work performed, yet an overburden may be incurred by excessive installation and maintenance cost, plus excessive power consumption per ton of finished material produced.

How often we read of, or witness, should we visit a brick works, the shortage or inefficiency on the part of the grinding department.

The lack of efficiency or capacity of any one department handicaps the efficiency of the total plant.

The lack of efficiency in any one department serves to destroy economy, which in turn jeopardizes profit.

The wonderful advance made in kiln design and construction, the improved drying systems and the brick machine, has in turn brought about a demand for more artistic and better made wares; the market demands better wares.

The demand for a better grade of wares has called for better work and increased the burdens in the grinding department, in that the material must be mixed better and pulverized finer and faster.

It is not plainly observable that more thought and energy have been rendered and valuable results obtained, as applied to the kilns, dryers and brick machine, than to the grinding department?

Has the dry pan been improved in keeping with the requirements for a better and greater output and with the years in which it has been used? Is it not a fact that the lack of capacity or efficiency of a dry pan was learned a long time ago, and that a demand for better work and more capacity has cheapened its usefulness, hence decreased its purchasing power to or near its building cost, which in turn has brought about the use of low-priced construction material, resulting in high operation cost added to inefficiency?

Would it not have been the reverse had it been possible to have increased the dry pan's capacity?

The demand of our twentieth century competition calls for the greatest accomplishment with the least expenditure of energy and capital.

A machine that can grind enough material to make 70,000 to 80,000 bricks a day and that will cost one-half as much as will a battery of dry pans of equal capacity means greater accomplishment with less installation expenditure. It means a saving of freight cost on over one hundred thousand pounds and occupancy of one-third the floor space and proportionately less shafting, pulleys, belts, elevators, labor, maintenance and power.

It means the omission of the machine, once thought to be efficient as operated under the closed century conditions, and the adoption of the modern pulverizer, endowed with a principle in mechanics, which has proved an evolution in economic productivity.

An engineer in charge of one of the largest paving brick works, which has used a large battery of dry pans, recently investigated one of these pulverizers, which was and had been in operation for the past two years. He reports he was surprised and greatly pleased, adding that the comparison of the two types of machines were in keeping with the change of economic conditions as between the nineteenth and twentieth centuries. He confirmed his conviction by immediately placing an order for the pulverizer.

George Vidette

Repeat Rhet 1-2,

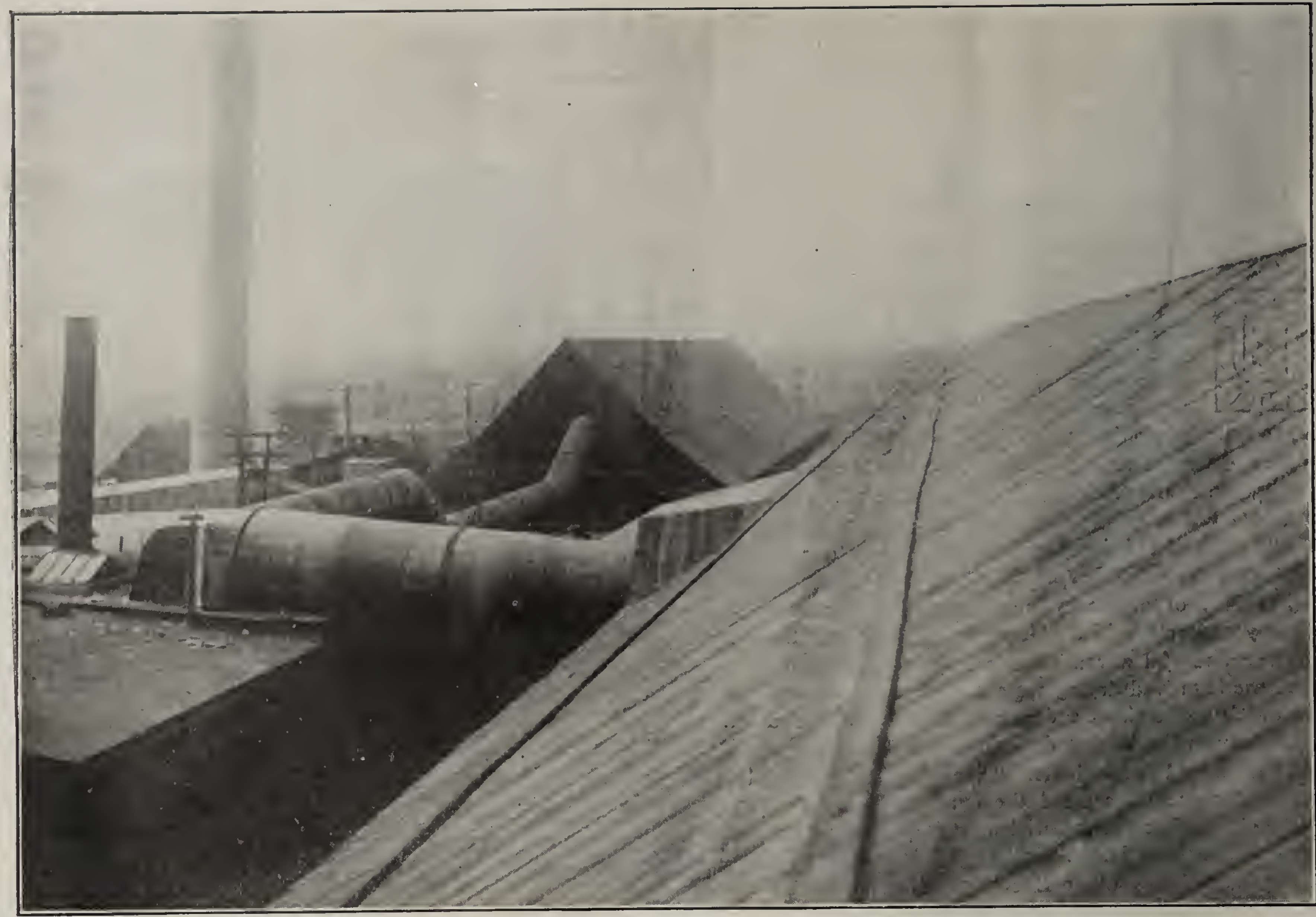
what is a pulverizer!

REINFORCED CONCRETE MEN PLAN TEST.

Prepare for Practical Test of Fireproof Quality Before New York City Officials, Architects and Engineers.

The cohorts of hollow tile and reinforced concrete are to come together in battle array in New York City, on Wednesday afternoon, July 30, to test by fire and water, if not by frost or time, the relative merits of a floor slab laid up with wire-mesh reinforced concrete against one made from hollow terra-cotta blocks. The witnesses of this test will be members of the building code commission of the Board of Aldermen of New York City, Mayor William J. Gaynor, Superintendent of Buildings Rudolph P. Miller, and prominent architects, engineers and builders. Frederick A. Snow and a representative of the Metropolitan Life Insurance Company, two of the largest lenders of building money in the Metropolitan district, have also been invited to be present.

The test is being financed by Albert Oliver, President of the Clinton Fireproofing Company, of 103 Park Ave., New York, who is having erected on the proving grounds of Columbia University, at Norman avenue and Monitor street, Greenpoint (Brooklyn, N. Y.), a one-story structure, part of which will be roofed over with reinforced cinder-concrete floor slabs and the balance with hollow tile which, he says, will be purchased in the open market, just as his own concrete ingredients will be bought. Mr. Oliver was prompted to make this expenditure to counteract, if possible, the arguments which have been advanced by the adherents of hollow-tile for floor construction, before the New York Board of Aldermen's revision committee.



Kiln Sheds Showing Hoods and Pipes Leading to Dryer

How One Plant Solved Fuel and Smoke Problem

THIS IS A STORY THAT PROVES THE APTNESS OF TWO OFT-REPEATED ADAGES AND CARRIES A MORAL WHICH IS WORTH KNOWING

By M. Miller

NECESSITY is the mother of invention, so it has been said, and how many times has it proved true! Some one also has said, "It is an ill wind that blows no one good," and this adage has many times been proved an apt one.

The case of the Bach Brick Company of Chicago, illustrates both points. Necessity forced Julius Bach to invent some system to eliminate the smoke and gases that belched from his kiln and stacks and settled down over a fashionable suburb, and he did. By achieving this he also brought about the solution of the fuel economy problem which was not on the program. It can be seen, therefore, that the wind of popular disfavor that forced Julius Bach to abate the smoke nuisance worked to his advantage after all. The following story tells how Mr. Bach worked out the problems he faced.

WHEN the City of Chicago ordered the Bach Brick Co. to either eliminate the poisonous gases and the clouds of coal smoke that poured forth from the open-top scove kilns and settled down on one of the aristocratic semi-suburban residence districts of the Northwest Side, or move its plant outside the city limits, the Bach Brick Co. faced a very serious problem.

Already it faced numerous lawsuits brought or threatened by residents in the fashionable Ravenswood Manor and Ravenswood Garden districts and it stood a good chance in losing each one of these. With the peremptory order issued by the City Council to abate the nuisance or move outside the city limits desperate action was necessary.

Summing up the situation the Bach Brick Co. found it had three ways to solve the problem:

First—It could move the plant.

Second—It could close down the plant and retire from business.

Third—It could devise some means of burning brick that would eliminate the gases and smoke.

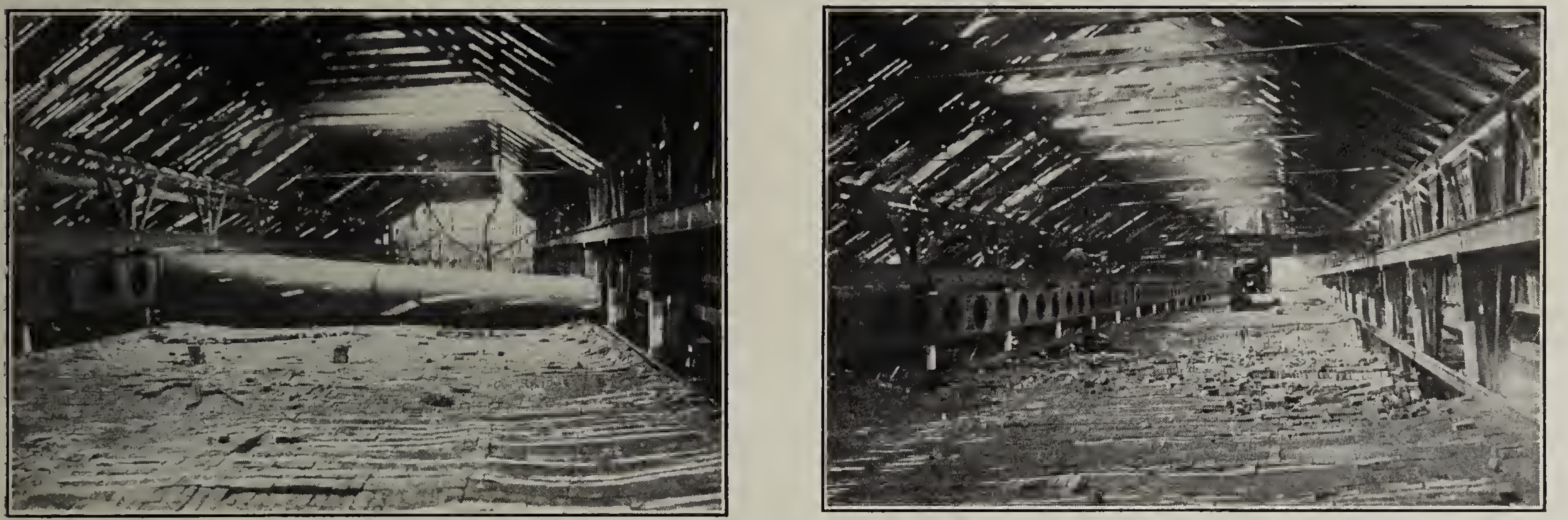
The first proposition was impractical because of the clay deposit on the present site and the expense attached to moving.

The second was also out of the question as the investment was heavy and the consequent loss would be great.

This left the third solution as the only one to be considered.

As the closed top continuous kiln was not adapted to the conditions existing at its plant, the company turned all its efforts towards inventing a process of burning its brick by which it could do away with the objectionable features.

The hood method of burning brick or what might be more properly called the open top continuous kiln is a direct outcome of these efforts and is due to the engineering skill of Julius Bach, one of the owners of the plant and commonly called the "Jack of all trades" at the factory.



These Two Views Show Interiors of the Open Top Continuous Kilns with Pipe Line and Arches. The Pipes Convey the Rising Heat and Gases to the Dryer.

The hood itself is as deep as the kiln and covers five arches at a time. This hood is directly connected with a pipe line running the full length of the shed and as the brick are burned the rising heat is caught by the hood and is conveyed by the pipe line to the dry room where it is utilized for drying the brick. The air, after leaving the dry room, is then drawn into a chimney 150 feet high, with the aid of a large electric fan and, if it is not free from all gases and smoke before entering the stack, it is absolutely harmless after reaching the top and mingling with the fresh air at that distance.

In trying to remedy the troubles at his plant Mr. Bach invented a method that accomplished this purpose but also one that has proven to be a great time, labor, fuel and brick saver.

From three to five stacks of brick can be burned at one time with this hood, taking thirty-eight hours and less, compared with forty-eight hours and more with the old method.

The greatest feature of this kiln, taken into consideration with the method formerly used at this plant, is the amount of scoving it does away with. In the old open top scove kiln, if the kiln was fourteen arches long it required a scoving at each head; thus if eight kilns of brick were burned in one shed it would require sixteen head scovings. In the new method only two head scovings are required; one to start the burn and the other to finish it. To put this in more explicit words, one scove wall is required to start the burn at one end of the shed, and another one to complete the burn at the other end. After the first three or five stacks have been burned the hood is set over the next stacks and these are burned without building a head scoving. Brick are being hauled away from the finished stacks, while the ones alongside of it are being burned and the setting machine is laying more brick for the following burns. After the first stacks are burned and up to and excluding the last only one scoving is required, and this is to start the burn and after that no scoving is built until the last burn, and in burning all the rest the heads are open. The word continuous is thus applied to the kiln as there is one continuous operation.

In doing away with these extra scovings a considerable saving in labor is brought about as well as a decrease in the number of brick wasted in scoving. It is well known that the brick at the heads of the kilns are not burned as well as those in the middle and sometimes become a total loss. With the new method the amount of brick burned improperly in the entire shed is occasionally less than those spoiled in fourteen arches before.

In case the kiln does not receive the proper burn the loss is trifling in comparison to the old method, as now only five stacks can be burned at one time, and consequently no more than that can be spoiled.

The clay in Chicago contains a large percentage of lime and as a result, the brick especially in the hot summer months have a tendency towards popping. This new method of burning seems to have completely overcome that difficulty.

Utilizing the heat from the burning brick has created a large fuel saving. All this heat formerly went to waste and necessitated extra fuel for drying the brick. Despite the size of the pipe line, which is six feet in diameter, it is not capable of handling all the heat that rises from the brick while burning. A fan 140 inches in diameter is used for drawing the heat from the hood into the dry room. The chimney 150 feet high with a six foot flue needs the assistance of a 128 inch electric fan, to draw the air out of the dry room, and up into the stack.

The maintaining and operating of this latter fan is such an expensive proposition that the company is building an additional chimney ten feet higher than the other with an eight foot flue, in the hopes that the combined draft of these two chimneys will be sufficient to draw off the fumes from the dry room.

The pipe line and the hoods used in both sheds were installed by the Page Boiler Co., 819 Larrabee St., Chicago.

In addition to the chimney the company is building six more dry room tunnels which when finished will make a total of twenty-six in all. Each tunnel holds sixteen cars. The Bach Brick Co. has a capacity of 180,000 to 200,000 brick per day and occupies thirty acres of land. Twenty cars holding two cubic yards each are used to haul the clay to the pug mill. These cars are hauled from the clay bed to the pug mill by means of a "Dinki." This machine is self contained, gasoline being used as a fuel, and was designed and built by Mr. J. Bach, who furnished the name as well.

The oil is stored in two large tanks of twelve thousand gallons capacity each. The oil in the tank in the ground is pumped into the one on the structure and thus furnishes a gravity line which proves an economical way of handling it.

An electric transfer car with an overhead trolley conveys the cars of brick from the dry room into the shed from which they are lifted with a Penfield setting machine and placed in the kiln.

FOLLOWS FOOTSTEPS OF FATHER.

Harold Penfield, recently elected assistant treasurer of the American Clay Machinery Co., of Bucyrus, Ohio, is a worthy son of R. C. Penfield, president of the same concern. With this heredity and environment, young Mr. Penfield promises to be a power in the clay machinery field long before his curly locks are silvered over with gray. He resembles his father very much—not only physically but in the energetic manner in which he takes hold of things, and the house of Penfield is not to suffer.

HELPS KEEP POWER COST DOWN.

Installation Under Expert Advice Helps Efficiency in Most Important Part of Clayworking Establishment.

"What does your power cost?" is the question most frequently asked owners of clayworking plants and the one that seems hardest for them to answer. With boilers purchased at one time or from one concern, engines from another and transmission from a third, the parts are far from being co-ordinate and extravagances hard to locate. The Murray Iron Works, of Burlington, Iowa, makes a specialty of installing power plants complete, including Corliss engines, water-tube and tubular boilers and arranging so that real economy is not only promised, but assured, before the machinery is started.

Clayworkers may be expert in the handling of clays and know just what drying and burning systems best suit the material they have to work with. They are, however, seldom power experts. Since advice can be obtained readily, it would seem a part of the true principle of

SAWYER BELTS STAND HARD SERVICE.

"Wear Like Iron" a Poor Description, Since Iron Could Not Stand the Racket.

Used in the roughest parts of clayworking plants, subjected to wearing conditions that few would believe any fabric would stand, Sawyer Canvas Stitched Belts go smoothly, if not merrily on, day after day, driving machines that have varying loads, or varying tasks (and consequent momentary stoppages) that put "back-wear" on belting as, possibly, no machinery in other industries inflicts upon the big power conveyors. Running in rooms laden with dust particles, many of which are sharp, tiny pieces of silica and other cutting-edged minerals, it seems to ignore conditions that would be destructive to other fabrics and be so wear-resisting as to be practically non-destructible.

Fastened with Crescent plates and rivets, these belts are stronger, at the point of joining ends, than in any other part of the belt. They are, to the man who wants to avoid belt trouble and who feels that one belt investment is sufficient for several years, worth considerable inquiry. They are made by the Sawyer Belting Co., of Cleveland, Ohio, and, as this company has very comprehensive and convincing literature, it would be worth your while to write them for information now—not wait until you have belt trouble, but to be prepared for it, in case it comes.

SOLVES THE TRACTION PROBLEM.

Orenstein-Arthur Koppel Company Sell or Rent Cars for Progressive Clay Plants.

No part of the equipment of a clayworking plant is more important than the tracks that carry the cars of green ware from the machine room to and through the dryers and to the kilns. A faulty switch or frog means an overturned car and a consequent loss of half-made ware, as well as a loss of labor salvaging the material that is worth the trouble. The same may be said of faulty cars, where warps or bends cause upsets in all sorts of awkward places.

The Orenstein-Arthur Koppel Co., of Koppel, Pa., manufacture a line of dryer and rack cars that are the perfection of mechanical excellence and carry rails in stock from 12 to 70 lbs., so insuring quick repairs to important parts of the traction system in clay plants.

A wire to its nearest sales office—in New York, Pittsburgh, Chicago, San Francisco or Montreal, will bring prompt shipments of the equipment that may be needed to put your plant in "running order" with the least possible loss of time. A letter sent before the repairs are badly needed may save you many dollars, in time lost and orders cancelled.

Invents Automatic Pottery Machine

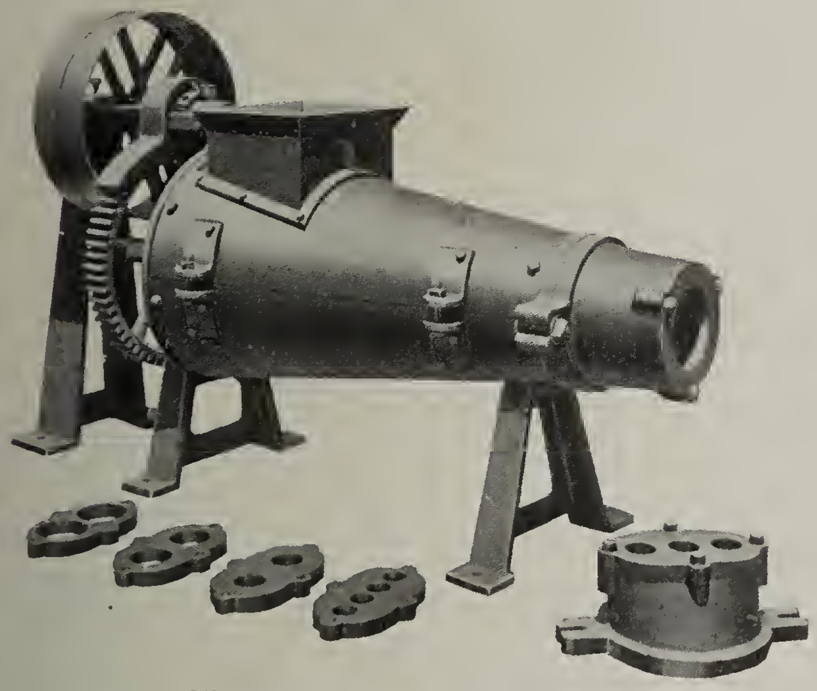
DETROIT MANUFACTURER SOLVES PROBLEM AND REVOLUTIONIZES HAND METHODS BELIEVED IMPOSSIBLE TO IMPROVE FOR YEARS

It is only a matter of a few years, in fact, it is within the memory of the present generation that the method of making pottery by means of the turning wheel was the only means employed for manufacturing ware from plastic materials. This required the employment of skilled workmen even on the simplest and plainest pieces of pottery and being slow was necessarily costly and expensive.

It has been a fact that the pottery business, (that is the mechanical end at least,) has been neglected to a great extent by the inventor and the process of manufacture for many years showed very little improvement over the old time methods. Of recent years however, there has been more of a stir all over this as well as the older countries—in the way of improvements and advancement in the manufacturing methods, and new machinery has been designed from time to time to reduce the production cost as well as to enable them to meet the increased demand that was forcing its way upon them.

The improvenemt has been very slow for the reason that so little machinery had been employed in the potteries that the mechanic rarely was called in and although the potter himself may have seen the necessity for machines to do certain operations it looked to him to be almost impossible to turn out satisfactory ware except by the methods that were employed by him and his fathers before him.

Of recent years, however, the machine men have been busy and the inventors have been devising new machines until now it is possible to make all of the plainer pieces as well as some of the fancier shapes by automatic machinery. This method of molding as employed by the Baird Automatic Machine was first introduced in the potteries where flower pots were the principal product and it proved to be a revelation to them. This probably was about six years ago and a steady improvement has been noticed since that time and the machines are used in a large number of the leading potteries. In designing these machines the inventor, W. J. Baird, took into consideration the fact that the average potter was not accustomed to handling complicated machinery and designed a machine that for simplicity and ease of control cannot be excelled.



The Baird Automatic Machine.

W. J. Baird.

In the manufacture of flower pots it was first believed that if the machine could average from 400 to 500 per hour it would be a wonder, as it was thought impossible to handle the pots in the green state at a faster rate without crushing or spoiling them, as they would not be protected by the plaster mold as they are when being taken from the jigger wheel. This speed, however, has been exceeded and has gone far beyond the potter's expectations so that the manufacturers do not hesitate to guarantee 1,000 pieces per hour on their present type of machines, and several potteries are turning out from 1,200 to 1,500 pieces per hour and even at this speed the quality of the goods far excells, that made by the older method and appearance in vastly improved.

There is no doubt that this machine will be generally adopted for even the finer class of ware as it certainly is an advanced idea, and with only the change of the mold it can be used on a large variety of shapes and sizes of pottery.

The one-mould feature appeals to every practical potter as it is an absolute certainty that all pieces made on that mould are alike, and then again it economizes in space so that he has the room he formerly used for storing moulds to use for manufacturing purposes.

News of the Machinery World.

"How to Make Your Canvas Belts Do Best Work" is a 12-page booklet published by the Cling-Surface Co., of Buffalo, N. Y. The booklet is well illustrated and full of sound technical arguments and data that should appeal to belt men.

At a recent election of the board of directors of the International Motor Co., John Calder, a distinguished mechanical engineer of large experience in design and construction and an active member of the A. S. M. E., was elected president; Mr. Robert E. Fulton, vice-president and manager of sales and service, and Mr. F. R. Phillips, assistant to the president. All of these elections are made from within the ranks and are looked upon as particularly encouraging for the future advancement of all employes of the company.

Installation to Give Even Clay Distribution

ONE CONCERN SOLVES RAW MATERIAL STORAGE BY HAVING SPECIAL CONVEYOR SYSTEM DESIGNED

By C. J. Peterson
Sales Engineer, Weller Mfg. Co.

THE problem of raw material storage is continually changing and great strides have been made in the economical handling of shale and clays. As a matter of course, the methods will continue to improve that decrease the cost and facilitate the handling of this class of material.

The accompanying cuts illustrate a receiving system for shale, recently installed in one of the largest clay product manufacturing plants in the world. Fig. 1 shows a portable cross conveyor which can be brought to any point along the receiving belt conveyor, the cross conveyor delivering the material on to this receiving belt conveyor which carries it up into the storage bins. Where the bins are in a continuous battery, the conveyor is usually placed in the center of them, and the tripping device such as shown in Fig. 2 is used. This delivers the material handled on both sides of the conveyor and the tripper travels up and down at a uniform rate of speed, distributing the material in an even pile all along the bins. If desired, of course, the tripper can be stopped at any one point, providing one class of material is wanted in a certain bin.

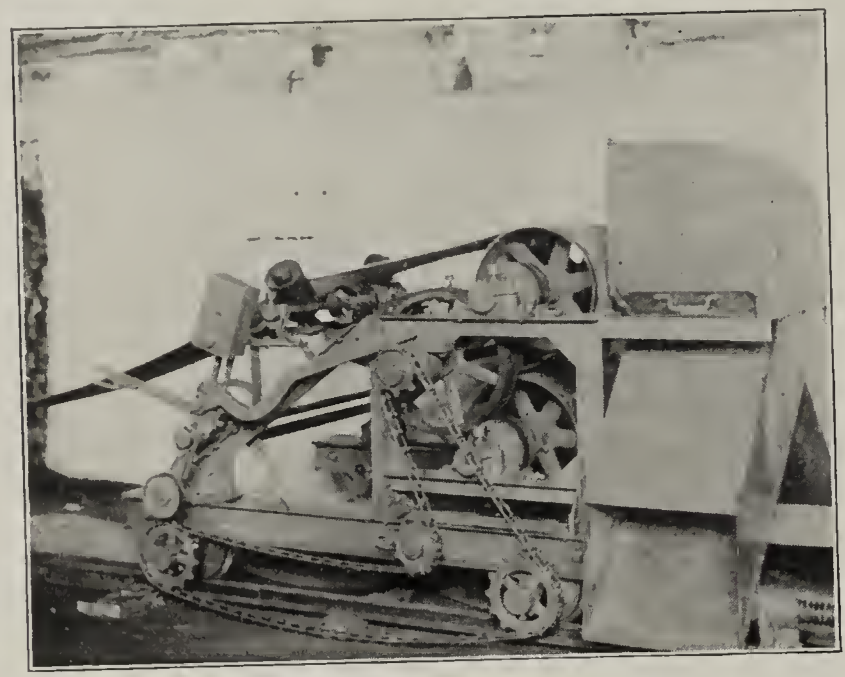


Fig. 1. The Portable Cross Conveyor.

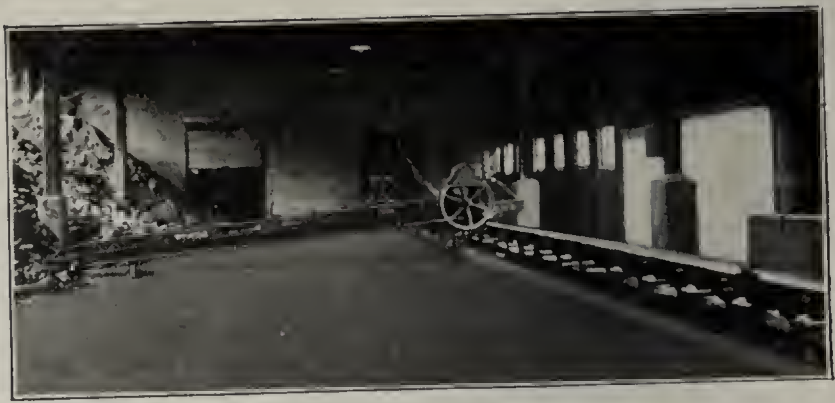
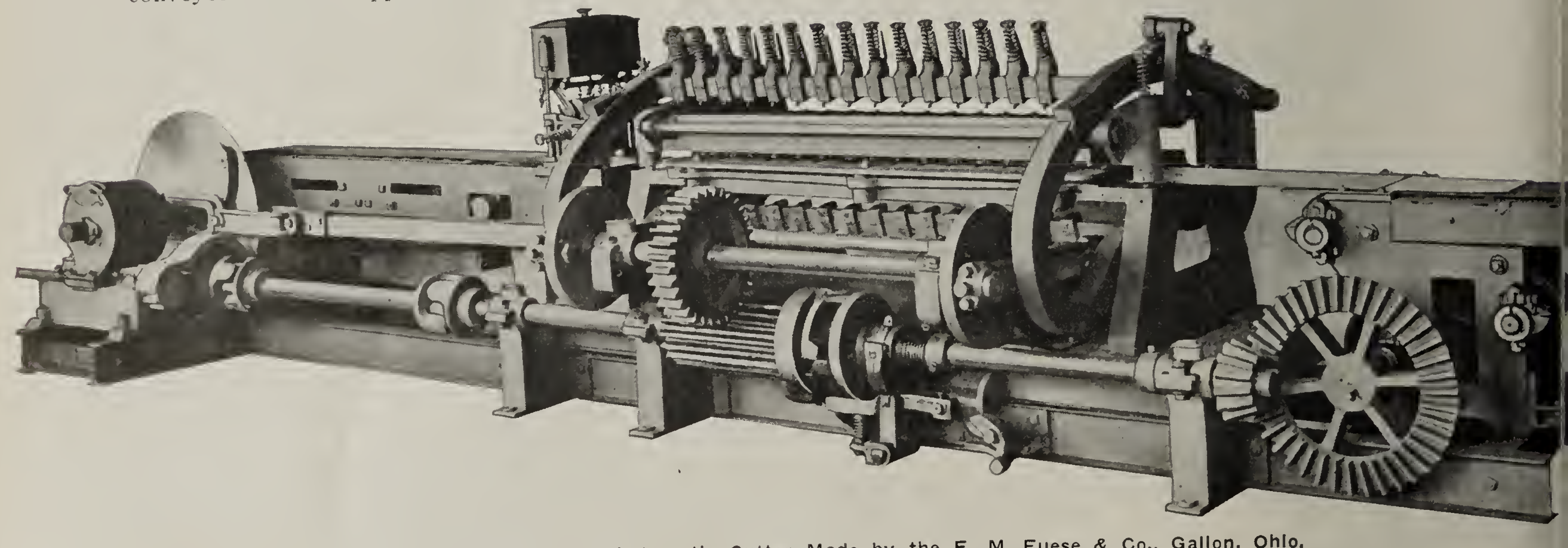


Fig. 2. Showing System Installed.

Where the material used in manufacturing the product is not of a uniform nature, that is, if it changes at different points in the bank or pit, this means of distributing it uniformly, assures a uniform product, which of course is the aim of the manufacturer. The above tripping device is absolutely automatic, traveling back and forth without any one attending to it. It is self-reversing and self-propelling. The power used to operate this tripper is taken from the belt conveyor itself.

One Corner of the Weller Plant.



Model T-60 Reciprocating Automatic Cutter Made by the E. M. Fuese & Co., Galion, Ohio.

Some Needs That Are Pressing in New Machinery

By

Ellis Lovejoy, E. M.

IT is not so many years ago when man made brick by hand. With the advent of the first successful machine he was content. Keen competition, however, made him dissatisfied and the demand for better equipment grew until today it is a rare brickmaker who touches his clay with his hands from the moment it leaves the pit until it goes to market in the finished product.

It would seem, then, that the height of mechanical perfection had been reached when we turn over the pages of the machinery catalogues, but there is no machinery manufacturer nor brickmaker who believes such is the case.

The spirit of the times call for not only improvements on what has been given us, but new devices and machines that competition and new problems make necessary. Mr. Lovejoy, who has done much to aid the brickmaker, here tells what he deems necessary in the way of machinery to increase output, improve quality and make the life of the brickmaker one long-drawn out pleasure.

Ellis Lovejoy.

WHEN one looks through the voluminous and complete catalogues of the clay working machinery companies it would seem that anything required in the manufacture of clay wares could be readily obtained.

Clay is full of troubles and those of us who have had long, intimate, and wide acquaintance with the material, have suitable respect for the difficulties which may lie beneath the mealy surface of a lump of clay.

Even in the digging,—but surely, you will say, we have ample equipment with which to dig clay—we have all kinds of hand tools, horse power equipment, such as open bottom drags, drag scrapers, clay gatherers, revolving scrapers, road scrapers, etc., and in power machinery we have scrapers, ditchers, steam shovels, vertical bucket elevator chippers, and perhaps others. The last mentioned machine, by the way, is recent and fills a vacancy which badly needed filling. It was invented by a clayworker to dig clay from a vertical bank fifty or more feet high. It performs two functions: First, it chips the clay into small lumps suitable for the factory machinery; second, it gives a uniform mixture of the clay from top to bottom of the bank.

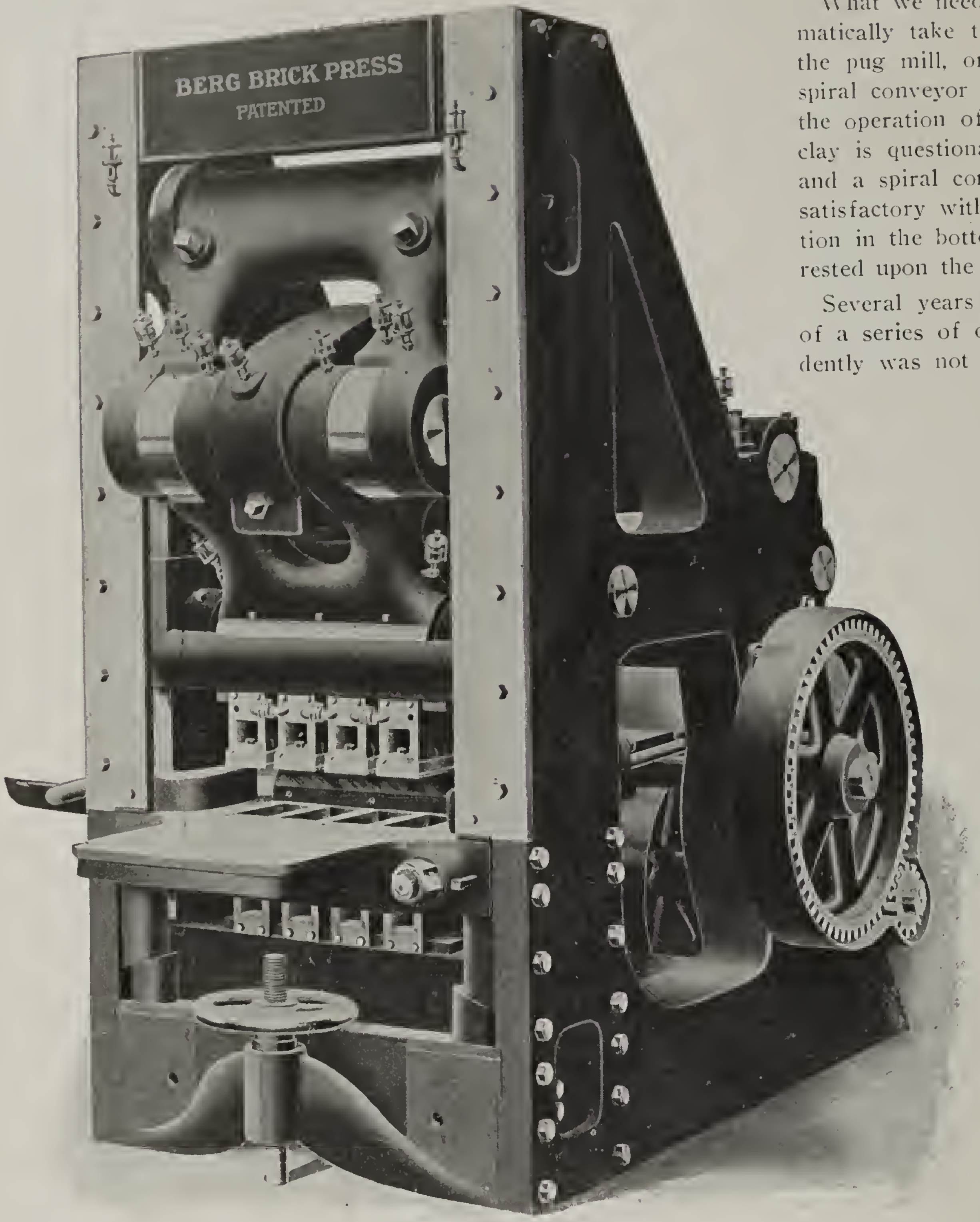
We need another machine, perhaps several more, but certainly one. There are many clay banks that are underlaid by quicksand, or are too wet to install any machinery in the pit. If the depth is shallow—less than ten feet, we may use a steam shovel with a back-acting dipper, but there are many clay workers who do not know such shovels are made.

Such a shovel can be placed on top of the clay and dip it up from below and dump it into cars alongside the shovel. A ditching machine also could be used in such a situation, but suppose the bank caves badly and suppose further that it is thirty or more feet deep and that it is necessary to have a uniform mixture from top to bottom in order to manufacture a satisfactory product.

We have no machine that will handle such a proposition. A modification of the elevator machine to work from above and on a slope will do the work and it would find application in many situations now using other types of machines. The German "Bagger" is such a machine but we have no "Bagger" in this country. It has wider application than any other for digging clay and yet we have not taken it up. It chips the clay, it gives a uniform mixture, it digs on a slope below the machine, it digs on a slope above, and many dig both below and above at the same time. Thus we could strip and dig at the same time, or we could dig sandy clay above and fat clay below and keep them separate if desired.

In the factory we need a new type of crusher. Where the clays and shales are hard and brittle the Blake and Gates types of crushers leave nothing to be desired, but there are many fire clays, especially the Cretacious clays, that are too soft to be crushed in either the Blake or Gates crushers because they pack badly, and they are too hard to be broken up by a granulator, and the lumps are too large to be handled by a disintegrator. A steam jacketed pulverizer fills this gap partly but not completely since the lumps may be too large for the intake. Besides, the power question must be considered, and we want in numerous instances a machine which requires little power and which will put the clay in condition for a disintegrator. The introduction of the chipping diggers, such as the Ditcher, the Elevator Bucket machine, or the "Bagger" will in some instances eliminate the need of a crusher, but where the clays are mined under ground these machines are not applicable.

We have seen a home made machine of the type desired, but it needed to be improved. It consisted of a double shaft with prominent teeth something along the line of a disintegrator, but slow moving and with prominent teeth. The teeth prodded into the lumps of clay and broke them up into small lumps.



The Berg Dry Press Made by the Berg Machinery Mfg. Co., of Toronto, Canada.

A comparatively recent coal breaking machine may be adapted to this work. It consists of a breaking plate equivalent to the fixed jaw of a Blake crusher, but the other jaw is replaced by a wheel with teeth which prod and crush the material against the breaking plate.

It may be remarked that we are followers rather than leaders, and many of our machines are adaptations from other industries, oftentimes without any modifications. As an example we may cite the elevator boot. For years we used the grain elevator boot with its small side hand hole for cleaning, and the same is still being used. Turn to any machinery catalogue and note the hand hole in the side of the boot, but in the more recent catalogues it will be found that while retaining the side hand hole, open ends are provided as they should be with a smooth plank for the floor. When an elevator clogs up it can be easily and quickly cleaned out from the end with a shovel but the side hand hole is useless. Formerly we built the boots of planks rather than bother with the grain elevator boots.

We need some kind of an automatic feeder from a ground clay storage bin. Disc feeders are being used and they are most useful machines, and have proven their value in many plants, but they do not fill the storage bin requirement in many instances.

What we need is some kind of a feeder which will automatically take the clay from a long bin and deliver it to the pug mill, or elevator. One's first thought would be a spiral conveyor of any length under a "V" shaped bin, but the operation of such a machine under the pressure of the clay is questionable. Many clays pack badly and build up and a spiral conveyor merely as a delivery machine is not satisfactory with such clays and would be out of the question in the bottom of the bin where the weight of the clay rested upon the conveyor.

Several years ago a bin-emptying feeder on the principle of a series of drag chains was put on the market but evidently was not a success.

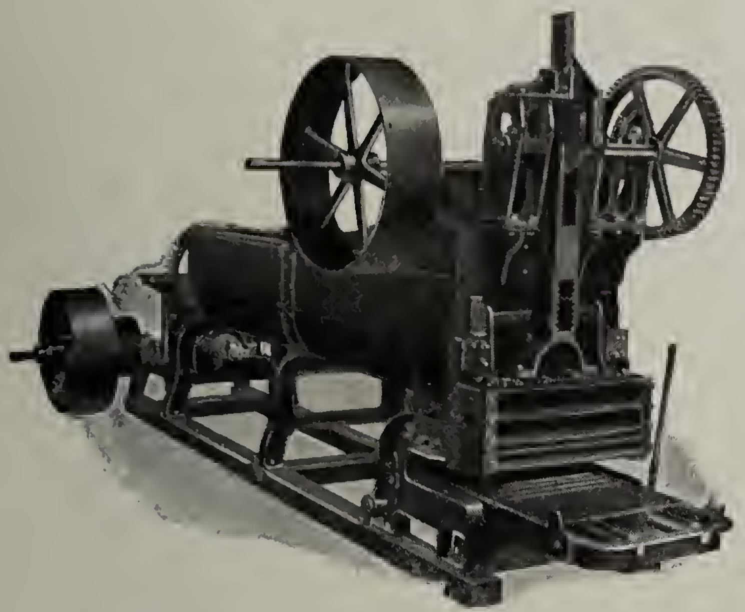
At present we use a conveyor belt or spiral conveyor in a pit under the storage bin and protected by short cover planks. A man in the bin is required to feed the clay to the conveyor, but we ought to be able to do away with this labor.

Many factories should put in a storage bin and automatic feeder between the preparing and making machinery. We have this equipment both for mud and for ground dry clay but it is not as generally used as it should be. Go into a factory without such equipment and you will see the take-offs working at a high speed to get away the stream of bricks and letting many of them go over the end and back to the machine. Come back in half n hour and you may see one man handling all the bricks while the other take-offs loaf. A little delay in the pit, or a belt off, or some minor break in the preparing machinery has checked the flow of clay, but when the flow begins again perhaps a belt off at the machine or a wire caught in the cutter or slowness in getting empty cars, fills up the machine and pug mill again to start the rush. This is a too common practice.

A margin of thirty minutes between the preparing machinery and the making equipment will often suffice to keep a uniform maximum speed, and at the end of the day the tally will register more bricks than under the former "scramble and loaf" system.

We are not satisfied with our pugging machinery. Pug mills are all right in many instances and we have no fault to find with them, but there are many clays that cannot be sufficiently pugged in a pug mill and the prepared material is lumpy. Wet pans give complete preparation but they are intermittent in their action and require more labor. When we have such a clay we put in granulators, disintegrators, and smooth rolls. The smooth rolls do satisfactory work on many clays, particularly when new.

On some wet sticky clays, the clay builds up on the rolls and on the scrapers and the rolls are choked. We have been in many factories where rolls have been installed but after a time have been taken out simply because of the trouble with the clay clogging. Unless both disintegrator and rolls are kept in good shape they soon wear hollow and let through the lumpy clay, and the clayworkers tell us that the clay reaches the machine no more lumpy without the disintegrator and rolls than with them. This could only be true after the disintegrator and rolls were badly worn. At any rate in many clays the disintegrator and rolls give a lot of



The Potts Brick Press Made by C. & A. Potts Co., of Indianapolis, Ind.

trouble and it is found better to sacrifice the product than to continue the operation of the rolls.

We should have a continuous operating wet pan for such clays. Such a machine is in common use in Germany and could be introduced into this country with profit.

If instead of the disintegrator and rolls we introduce a separate auger machine with a series of small holes or slots for the die we would get the desired preparation for the final making machine but such a rig would require excessive power and would not be the equal of a continuous wet pan.

We are often troubled with ground clay bridging in the storage hoppers. The angle of repose in a bin is often seventy to eighty degrees. It is impossible to keep the operation going without some one constantly poking down the clay. In other industries we have machines which can do anything but talk, and it seems absurd that we cannot design a simple machine to do this crude work.

Going back to the preparation of clays it occurs to us that there are many pebbly clays that need some equipment to remove the pebbles. An effort was made a year or two ago to introduce a clay cleaning machine in this country but without success probably because the capacity of the machine was too small and the equipment and power required too great.

Up in Minnesota years ago, and perhaps to the present time, the pebbles were loosened from the clay by a whipping machine and the pebbles were screened out and rejected. There are many glacial and sedimentary clays that would be made invaluable if the pebbles could be removed, and a machine for this work would not be a serious problem.

The Minnesota machines were simply chains fastened to a vertical shaft in a vertical cylinder. Possibly a pulverizer could be modified to do the work, but the present operation of a pulverizer is too severe and requires too much power. We do not wish to pulverize the pebbles, which are often limestone, but simply to loosen them from the clay so they can be screened out. In several plants we have seen the work done in a dry pan by raising the mullers an inch or two from the grinding plates. At short intervals the pans were stopped and the pebbles shoveled out.

We often find more labor in the operation of the dryer cars than should be required, and it is largely due to the method of handling the cars and trouble with them in the dryer. Dryers with sufficient grade to permit the cars to run down by gravity are the most common, but if the grade is steep enough to let every car down it will be too steep for the average smoothly running car. The troubles in the movement of dryer cars is too familiar to all of us to need discussion, and the result, as we find it in many yards, is that four men are required to do the work of two.

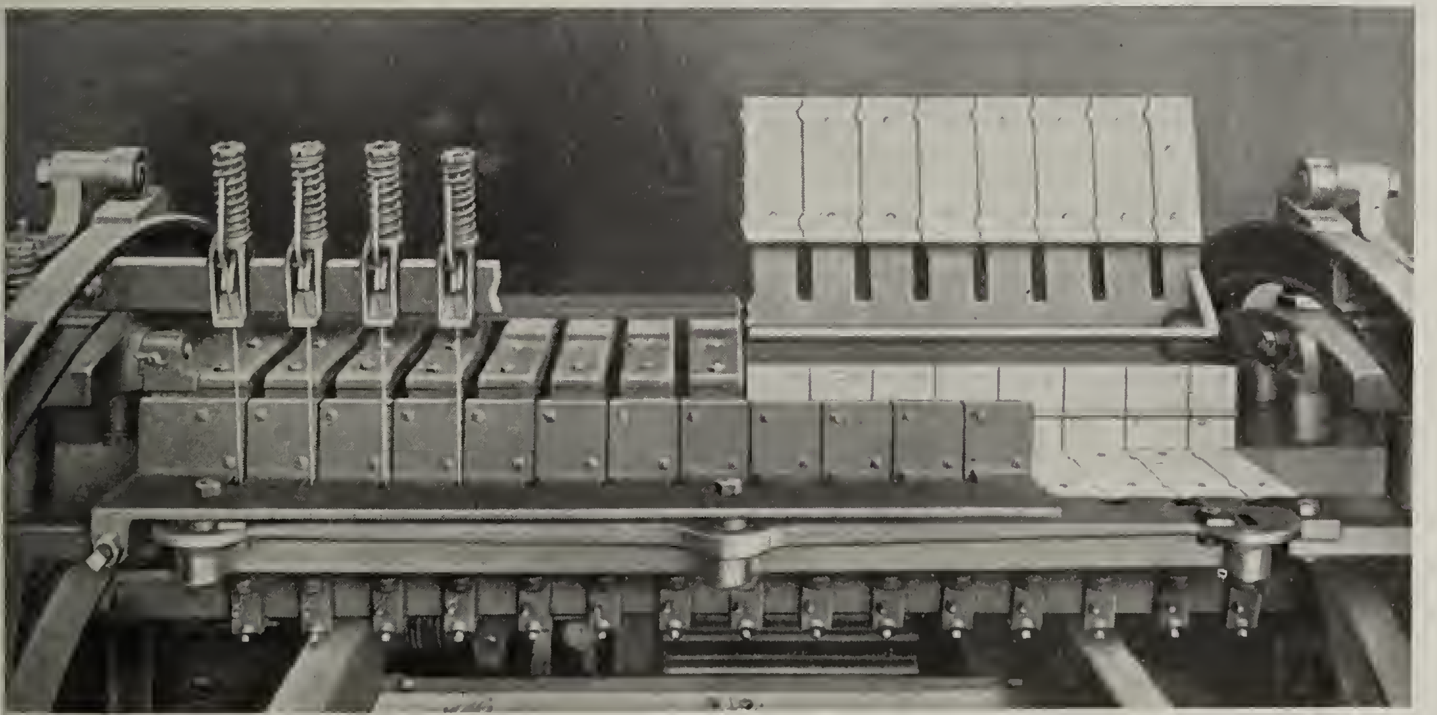
Engineers familiar with these troubles have advocated dryers without grade and the use of a mechanical device to pull the cars which are automatically coupled together and uncoupled. Such systems have been introduced in a number of yards but they have not been taken up by the makers of dryer cars, with the result that the clayworker submits to the dryer troubles in moving cars rather than go to the cost of the extra equipment.

On a number of yards will be found an automatic chain system of getting cars up an incline at the delivery end of the dryer in order that they may run back by gravity to the machine. Why not extend the system to move the care in front of the take-off belt to take the place of the hurly burley that occurs every time a car is loaded and the string has to be shifted?

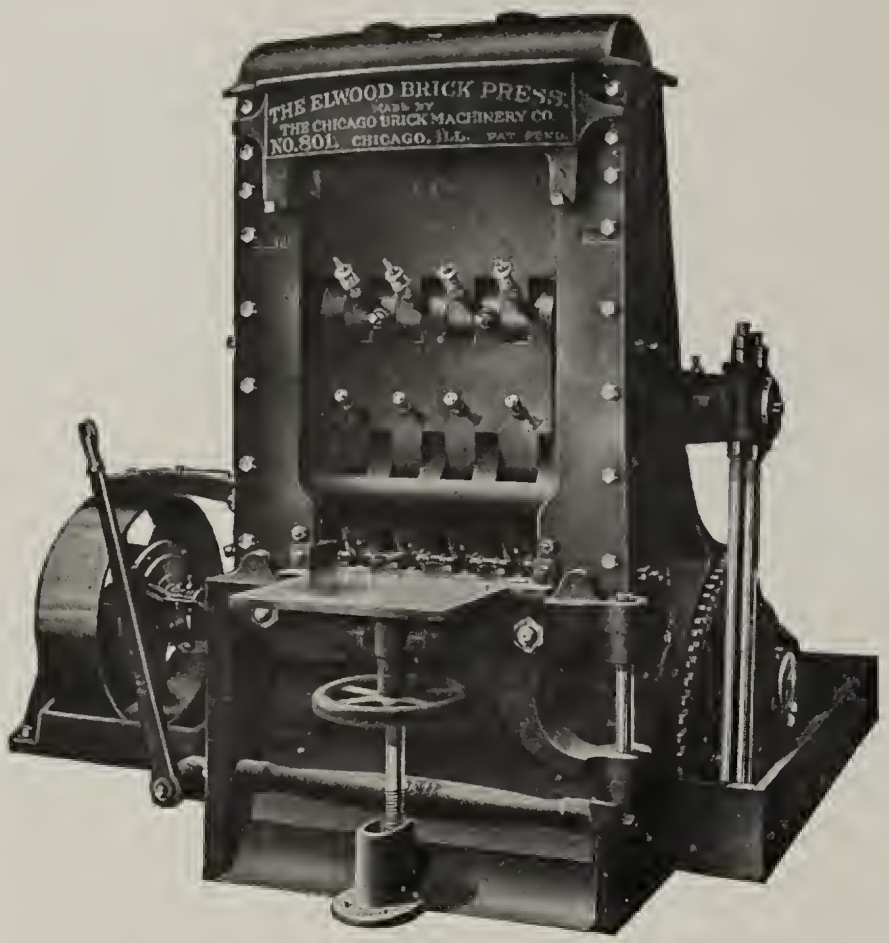
When cars are coupled together automatically it is a simple matter to pull the string from a tunnel by power and automatically cut off the end car after moving the length of one car.

Automatic coupling is a simple matter, and since in a brick plant the uncoupling points are fixed it is equally simple to have automatic uncoupling.

In closing I wish to mention one or two little things. Little things should not be reserved for a climax but in clay-



The Dunn Patent Cutter for Making Wire-Cut-Lug Paving Block.


THE ELWOOD BRICK PRESS
MADE BY
THE CHICAGO BRICK MACHINERY CO.
NO. 801 CHICAGO, ILL. PAT. PEND.

The Ellwood Dry Press Made by the Chicago Brick Machinery Co., of Chicago.

working it is the little things that make the big things profitable, or at least point out the way.

I would install a registering marker on the bar of clay from a stiff mud machine to determine how many brick or feet of hollow ware the machine puts out every day.

I would compare this record with the record of the number of feet or pieces which were put on the cars.

Many manufacturers will be surprised to find out that they have run out fifty or sixty thousand brick in the column and only saved thirty or forty thousand, making full allowance, of course for the necessary (on some cutters) waste cut. With such comparative records revealing the operation, the manager, or superintendent is going to get busy and find out what is the trouble.

I find tally boards with pins, or paper and pencil the most common methods of keeping tallies and these take time. In the kiln, for instance, after each load the drawer takes off his hand leathers, or one of them, fumbles with a pencil, marks the load, and replaces the leather. Time, ten seconds; total time for crew of six, one minute; time per day for thirty thousand brick, five hours, cost, one dollar.

In the machine room I would put springs in the track connected with a counting device which would register every car as it left the machine room, accurately and without loss of time. I have even seen such a rig connected with a registering clock in the office and at a glance the manager would detect any delays and see whether the rate of output was keeping up.

But the men would cheat, you will say; but we are not trying to prevent cheating, not now at least, which would be equally true of any tally system. We are trying to save the minutes.

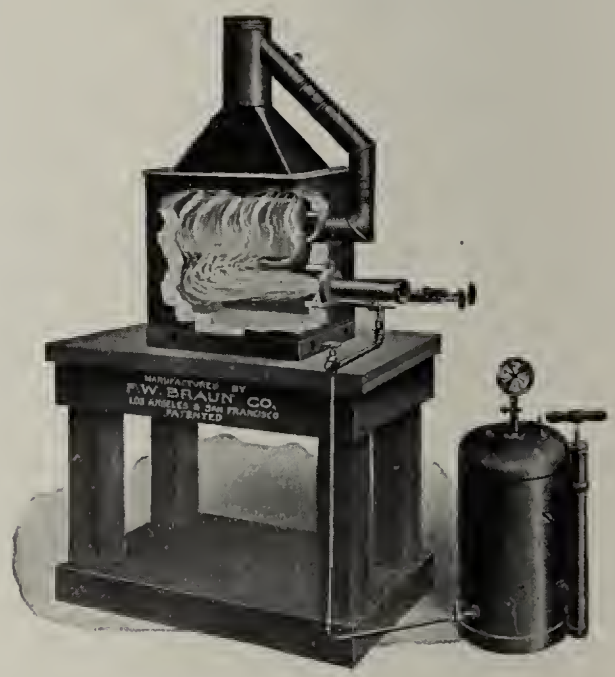
I would put a similar rig in the transfer at the delivery end of the dryer to register the cars into the kilns.

I would do away with tally boards and papers in the kilns and cars and use similar registering devices.

Even though we used nothing more than the counter with a chain attached to register, we would save time over the pin and board, or pencil and paper method, and the count could not get lost.

Combination Kiln for Laboratories

Many of the more progressive clay plants have testing laboratories and this requirement has brought forth the Braun Combination Kiln. The kiln consists of a furnace divided into two different compartments, the upper compartment containing the muffle, and the lower the open fire chamber. The flame is forced directly into the lower chamber, which is used for testing clays in direct contact with the flame. The muffle contained in the upper compartment is heated through its fire clay walls. The muffle chamber is used for burning samples of clay and glazes when it is desired to perform an operation not in direct contact with the flame. There is naturally a difference in temperature between the open fire chamber and the muffle chamber as both compartments are heated simultaneously. The arrangement of this kiln is such that tests can be made on the same clay at two different temperatures by using the open fire chamber and the protected chamber (the muffle). This feature of the Braun Combination Kiln is an improvement over the old style muffle kiln, and saves much time.



The outfit is primarily intended for testing the burning quality of clay samples, but it is also used in testing clays, glazes, pottery and porcelain. It can also be used for establishing the exact degree of heat at which clay shall be burned, as there is ample room left in both chambers for a Segar cone or Pyrometer tube.

It is sometimes used for the manufacturing in a small way of samples of clayware for tests or approval, and considerable time will be saved, as the same results can be obtained in the Braun Combination Kiln in from two to three hours, as in from three to five days in the large kilns.

It is also being used for checking up mixtures of different clays such as are used in various plants, and will by proper handling result in the detection of errors before large kilns are burned and spoiled.

Devoting his energies to the production of the finer grades of china, Walter Scott Lenox, president of a company of potters known as Lenox, Incorporated, now vies with England and France in producing the most exquisite ware coming from kilns anywhere in the world. The work of this company marks an important step in the commercial, as well as the artistic development of America.

Scientific Transmission

FAULTY SYSTEMS IMPAIR EFFICIENCY IN CLAY PLANT AND REDUCE PRODUCTION

By C. R. Trowbridge
Of the Dodge Mfg. Co.

THAT the transmission system of a plant should be planned with some idea as to its relation to the work to be done is not questioned by those expert in getting the greatest value out of the smallest expenditure, but how many clayworkers give this proposition a thought? Mr. Trowbridge has written a most interesting article on this subject.

ONE of the first things which the modern efficiency engineer is obliged to consider when he attempts to plan a system for the improvement of the efficiency of a manufacturing plant is the apparatus for the transmission of the power to the machines by which the work is to be performed. If the transmission, shafting, pulleys, belting and entire equipment are not in proper condition, any attempt to introduce higher speeds, heavier cuts and greater output will be followed by transmission troubles, and the otherwise well considered plans will be impeded at the start.

Too often these transmission troubles arise because the apparatus for conveying the power to the machines has not been properly considered in the first place. The transmission system is really a machine in itself, falling accurately within the famous Reuleaux definition of a machine, as a "combination of resistant bodies so arranged that by their means the mechanical forces of Nature can be compelled to do work, accompanied by certain determinate motions."

This means that it should have had the same care in its original design as is given to those other machines with which it is combined to form an efficient whole, and it also means that the transmission system ought to be constructed as a standardized unit, in the same manner as any machine tool.

No competent engineer would think of building an operative machine by getting the various parts from different, independent sources, and allowing them to be made without special reference to the character and design of other parts with which they were to be united. On the contrary, the balance of material, proportion, stress, speed and operative functions is most critically studied, and the modern machine tool is the result of the most careful application of scientific principles.

The moment that the transmission system of a shop is considered itself as a machine it ceases to be a mere aggregation of independently collected parts and becomes subject to the same scientific rules of machine design as should apply to the other tools with which it is associated. This is a very different conception of the subject from the old idea. Instead of getting so many feet of shafting of various diameters and lengths, buying hangers, couplings, clutches, etc., of the same dominal dimensions, picking up pulleys of miscellaneous origin, and having the whole erected by laboring gangs of temporary organization, the modern system involves the preparation of an entire plan of the transmission system, adapted, not only to the immediate work in hand, but having in view the possibilities of future extensions and of increased demands.

There is no difficulty about the production and installation of thoroughly efficient and reliable transmission, since such an undertaking requires simply the same kind of ability and attention as has to be given to the making of any high class machine. The moment the transmission is considered as a complete mechanical unit, with all its parts standardized and proportioned to be operated with each other, the mulitude of difficulties which exist with an ordinary assembled installation disappear. The friction losses may be reduced to a minimum by the employment of standard methods of lubrication, with maintenance of accurate alignment, and delays involved in the installation of new parts, replacement of damaged pieces in case of accident, or shifting of elements to meet changed conditions or additional machinery.

C. R. Trowbridge.

When to such a standardized system of transmission there is added efficient supervision, maintaining a containual inspection of alignment, lubrication, condition of belting, etc., maximum efficiency necessarily follows.

Urges Practice Rather Than Theory in Clay Plant Equipment and Construction

MACHINE MAN PLEADS FOR SANE AND ECONOMIC METHODS IN BUILDING AND INSTALLATION

By George B. Drennan

Of the J. D. Fate Company

AS A RULE there is too little attention paid to the actual construction of the plant and too little attention to the various details which go to make up the economic operations, and right here is the great secret of financial success or failure in any and every branch of the clay business.

The first requisite of a clay plant is an abundance of good clay and then comes a properly designed building, one arranged so that there will be no extra handling of either the raw material, the manufactured product or the raw material in the process of manufacture.

Arrange to have the material pass through the plant by straight lines, avoid making it turn at right angles unless it should be that the power and machine room and the dryer are to be placed side by side, which is, by some, considered very good practice. I incline toward this theory myself, principally for the reason that this arrangement brings the kilns and power-house in close proximity and the fuel supply is thus easily available to either of them and the arrangement often will save the labor of one man—something we are all trying to do.

Labor—or, rather, unnecessary labor—is and always has been the cause of many failures in the clay business, and in planning a clay plant this one thing should be uppermost in the minds of the architect and consulting engineer: "Get the maximum amount of labor performed by the minimum of working force."

In planning the plant, or more so, in equipping it, do not hesitate for a moment in expending a thousand dollars, or even two, if by so doing you eliminate one man from the working gang.

In general machine-shop practice it is customary to figure a man for every machine, but if by some arrangement of machines, one man can run and attend two machines, the manufacturing cost of the article being produced is very materially reduced, possibly and quite probably to the extent of 25 or 30 per cent and such savings mean big dividends.

But to return to the construction of the plant. What shall we build it of? Why, clay to be sure. What else is there that any clay works can consistently use? Cement? Wood? Oh, no! Why, the very idea is ridiculous to use these, our most active and in fact almost our only competitors!

Burned clay may cost a bit more at the time, but we are not building for a day or a year. Build amply. Do not make the plant, and especially the machinery room, so small you are cramped for room. The old saying, "Cut your garment according to your cloth," might be apt here, and we should consider only the lay of the ground and not the financial part in this connection.

You may build broad enough and long enough, but do not forget light and air, and also head room. The average clay plant of the past was constructed with a five-foot six-inch or six-foot lower story, and during the past twenty years and more it has cost me from one to three new hats per year trying to explore the recesses in dark, low-storied plants, especially drain-tile plants. The man or set of men who contemplate the building of a clay plant and who do not measure up to the standard of at least a seven-foot story should be enjoined from going into the business.

George B. Drennan.

After you have arranged for the building of a commodious and convenient building, look well to the equipment. First, know your clay, and if it is especially adapted to any one particular process, adopt that process even though some so-called ceramic engineer or machinery man may tell you that "you can make anything with your clay." There may be clays of such nature that almost anything in the clay line can be produced from them, but they are scarce, mighty scarce.

In equipping the plant you may be lavish, apparently, and even very extravagant, and still be economical. If you omit one single machine which will reduce your working force or that will better prepare and work your clay, you are extravagant in equipping your plant and contra-wise the installation of any and every machine that makes for economical operation or more perfect product is the acme of economy.

You will no doubt need some advice and assistance in planning, building and equipping your plant, and there are many so-called ceramic engineers who are long on theories and short on practice, who will, for a compensation, advise you to the extent of their knowledge, and then some. Again, there are men with years of experience gained by actual practice and extensive travel among clay plants who will for a modest consideration advise you to the extent you need. Such men will consider carefully your building site and plan a plant accordingly. They will carefully consider your clay, also your market and equip your plant with machinery of a capacity for your market and of a type best suited to prepare and work your clay and produce the most perfect results.

Secure such a man and allow him to build and equip your plant, or if you know, or think you know what you want, secure him and his services for the advice he will give you, and it will be worth all you pay for it.

An Electric Drag-Line Installation

By F. G. Bolles

Of the Bucyrus Company.

THE application of electricity to a drag line excavator in the clay pit marks a further step in the progress of the industry. Many clayworkers have found economy in the use of the drag line in handling their clay problems. The use of electricity has increased that economy under proper conditions. The installation described below can be applied as easily to the clayfield as to the purposes given.

IN the Truckee-Carson Reclamation Project, Lahontan, Nevada, the U. S. Reclamation Service is operating an electric drag line excavator. This installation is out of the ordinary, not so much because of the machinery, which is practically identical with the steam driven machine, but on account of the alternating current motors with automatic and semi-automatic control. This has to do particularly with the control of the swing motor and the protection of the hoist when stalled.

The electric power for this machine is supplied from the generating plant. The electric current is transmitted at 2,300 volts, 3 phase, 60 cycles, alternating current, and is "stepped down" to 440 volts by means of a portable transformer "Station" near the drag line. From these transformers a 3-conductor line mounted on portable poles, carries the current up through the center casting of the drag line and on to the switchboard. This is mounted in the cab of the machine in the same place where, in a steam-driven drag line, the boiler is located. Here are also mounted on the concrete floor, the control resistance frames. The incoming line is arranged in such a way that any amount of swinging of the drag line does not cause any wear or impose any strain on the insulated electric wires.

There are two motors—one driving the drag line and the hoist drum, and the other the swinging machinery. The motors are geared through double sets of spur gears to their respective machinery. The hoist and drag line motor is 90 H. P. and the swing motor 50 H. P. These horse power ratings are based upon the intermittent service of the motors, which are of the variable speed induction type, i. e., the rotor windings are similar to those of the stationary elements of the motors and are connected through slip rings and brushes to the controlling apparatus and resistance frames. Each motor has its own controlling panel (switchboard), and the wiring between the motors and controlling apparatus is very accessible and exceedingly simple to follow up. All the wires are heavily insulated and the entire equipment is free from any danger of short circuits or grounds often met with in electrically operated excavating machines. Diagrams shown in Fig. 1 gives an idea of the arrangement of the motors and controlling apparatus.

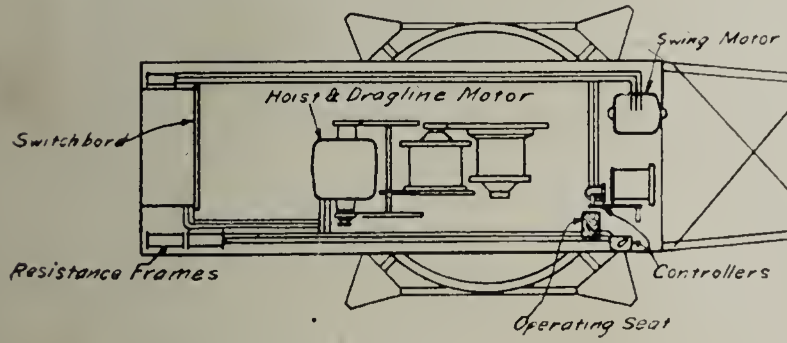
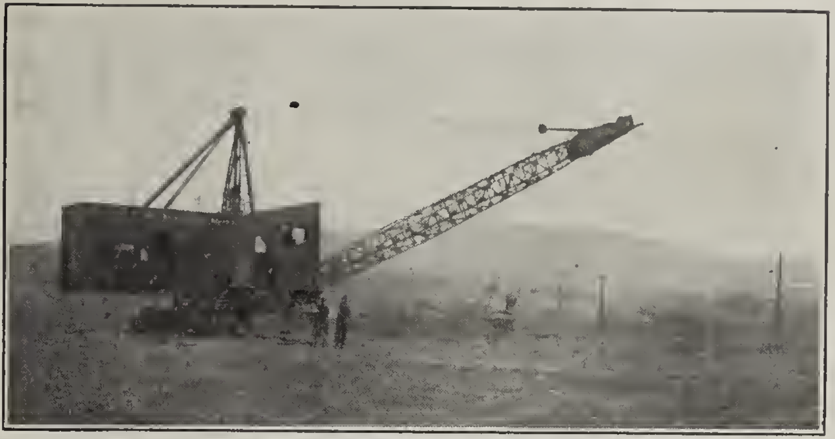


Fig. 1.



The Bucyrus Electric Drag Line at Work.

The hoist motor is operated from a drum controller mounted on the right side of the operator. A circuit breaker controlling switches (solenoid), and the "jamming relays" in connection with resistance frames constitutes the entire electrical equipment for the hoist and drag line machinery. The drum controller is similar to that of a street car and is operated in the same manner, but the solenoid switches and relays automatically take care that no excessive current is passing through the motor, so that when the motor gets stalled the current will never be large enough to injure the motor windings. This means that the circuit breaker opens only in case of a short ,and so it becomes a welcome protection rather than an annoying apparatus which interrupts the operation of the drag line by opening every time the motor is overloaded.

The principle of operation of solenoid switches and relays is based upon electro magnetic action and is very simple. This will be seen from Fig. 2, showing two solenoid switches with relays. When one of the solenoid switches opens, on account of a larger current flowing through the relay than it is adjusted for, resistance is automatically inserted in the rotor winding of the motor and this causes an immediate decrease in the current taken as well as a decrease in speed. Inversely, when the load on the motor decreases, the solenoid switches, if open, close, and short circuit the rotor resistance and the motor speeds up. Thus it will be seen that the motor acts very much like a steam engine. It is well known that electric manufacturers have spent a great deal of time and money in order to develop a successful solenoid switch for alternating current. It was, therefore, not until one of these switches had been tested for over a million operations in steel mill service without showing any wear, that the Bucyrus Company decided to use them on their electrically operated excavating machines.

The swing motor is operated from what is termed a master drum controller; i. e., the controller does not handle the main current which passes through the motor, but only that which flows through the small controlling wires. The controller is mounted to the left of the

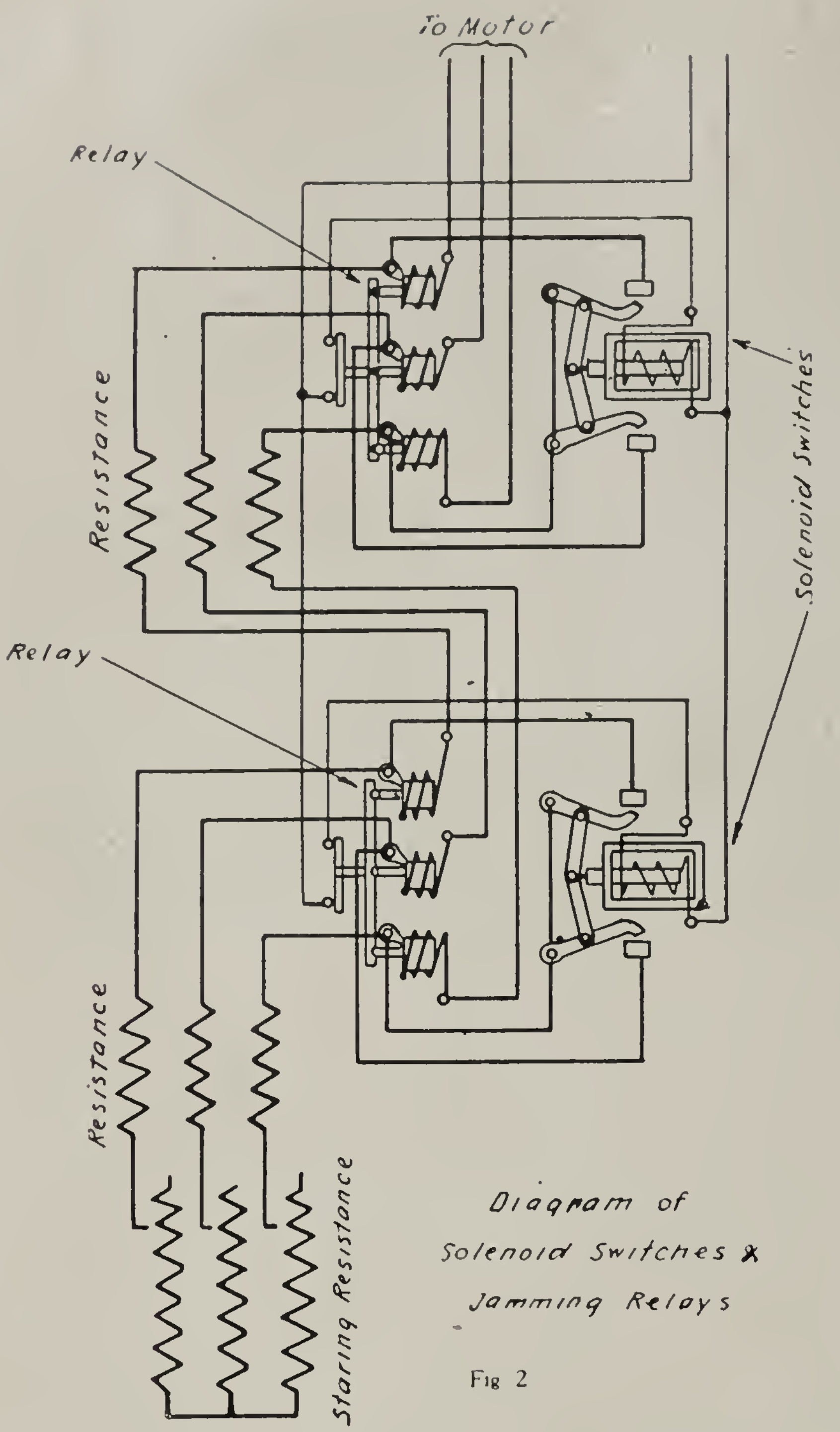


Diagram of Solenoid Switches & Jamming Relays

Fig 2

operator and the handle moves in a vertical plain. The solenoid switches and relays are similar to those of the hoist motor, but they are greater in number and are so interconnected that the cutting out and inserting of resistance in the swing motor circuit takes place absolutely automatically and independent of how fast the operator moves the controller handle. Thus the swinging of the boom of the drag line is always uniform. When the operator wants to slow down the swing and stop the boom, he moves the controller handle into the reverse position. This brakes the motor, and, due to the automatic feature of the controlling apparatus, the boom comes to a stop in the shortest possible time, but without shocks to any part of the machine.

On the concrete floor in the rear of the machine is mounted a small belt-driven compressor, which furnishes air for operating the friction and thrust cylinders.

A series of field tests were made on the machine during which the current flow, voltage variations, etc., were recorded on continuous indicator cards. These tests showed that the alternating current controlling apparatus worked satisfactorily in spite of large voltage fluctuations, which occurred during the first few hours of operation. It is interesting to observe how the input of the machine varies during one cycle of operation, as shown in Fig. 3. This figure represents a characteristic curve of the total current taken by both motors.

It will be noticed from Fig. 3 curve that 'this particular drag line excavator makes between 1½ to 2 cycles per minute, which means that it is as fast as the steam machine operating under similar conditions. This demonstration will doubtless come as a revelation to those who formerly had an idea that electrically operated excavating machinery was slower than steam. The peak loads are instantaneous, and as a matter of fact the inertia of the recording instrument needle makes the peaks appear greater than they actually are. The total power consumption is such that the economical operation of drag line excavators driven by electric motors must be considered an established fact. When further considering the absence of boiler, which besides requiring a fireman, necessarily is the delicate part of the steam-driven machine, and, further, that the attention required by the electric motors is negligible compared with the steam-driven machine, it will be recognized that the electrically-driven drag line excavator has a field not only in places where coal and water are expensive, but that it may be operated to advantage where electric power is available and can be purchased or generated at a reasonable rate of expense.

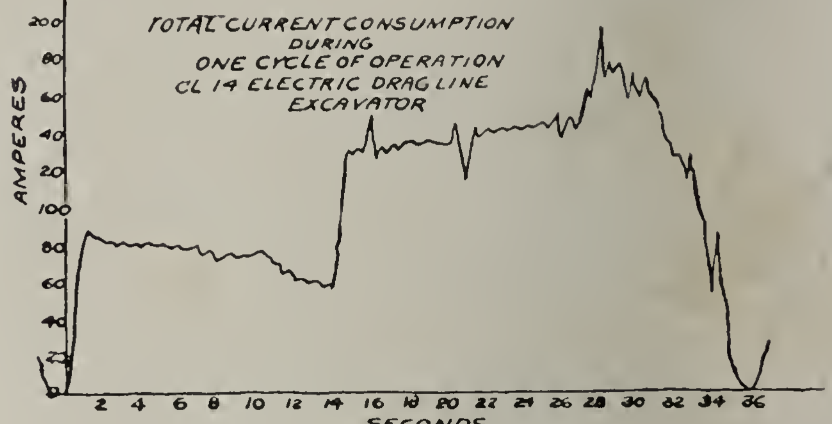


Fig. 3.

The drag line was designed and built by the Bucyrus Company and the controlling apparatus furnished by the Cutler-Hammer Mfg. Co., of Milwaukee.

SELF-CONTAINED AND DEPENDABLE.

The Standard Drier Saves Fuel, Labor and Worry, Producing Results With No Expert Attention.

"We are having trouble with our dryer" is the daily story of clayworking plants. Either the ware checks or sweats or takes too long in drying, thus cutting down "output" and running up "overhead." The valves leak or the pipes need replacing—something is the matter with the dryer nearly all the time. Probably the burner blames some of his own accidents on the drying system, knowing it cannot "talk back" —but at the same time, "give a dog a bad name, and you may as well hang him."

When you buy a new brick dryer, installation cost fades beside cost of operation and cost of maintenance. The Standard Drier has no engine—no complicated machinery of any kind. It operates easily and automatically, requiring no expert attention—in fact, hardly any attention at all. It cuts the labor bill in half and reduces the repair bill, so far as it affects the drying of your ware, to a minimum. The makers, the Standard Dry Kiln Co., of 1540 McCarty St., Indianapolis, Ind., have a list of the plants where this drier is living up to all of the promises they have made for it, and clayworkers who are contemplating the installation of a drying system, either on a new plant, or to replace some other system that has proven a failure, will do well to write for catalogues and descriptive matter, as well as for the address of some plant, near where they themselves are operating, in order that they may see this system earning dividends for the lucky ones who were wise enough to install it some time since.

A Simple Drag-Line Scraper for Clay Plants

BEING A DESCRIPTION OF A MODEL THAT HAS MET WITH SUCCESS IN THE HANDLING OF CLAY

By J. C. Buckbee

THERE has been a demand for many years for a simple, economical excavating machine on the drag scraper principle that would reach out over a large radius to secure its load and deliver the load at a common dumping point. Many attempts have been made to devise such a machine but, owing to complicated design or other limitations, but little has been accomplished by any of the machines placed on the market. The following article describes one that has met with considerable success.

IN THE Schofield-Burkett Excavator all parts have been brought down to the simplest possible form, and perhaps the machine is best described by its makers, who state, "It can be operated by a laborer and repaired by a country blacksmith."

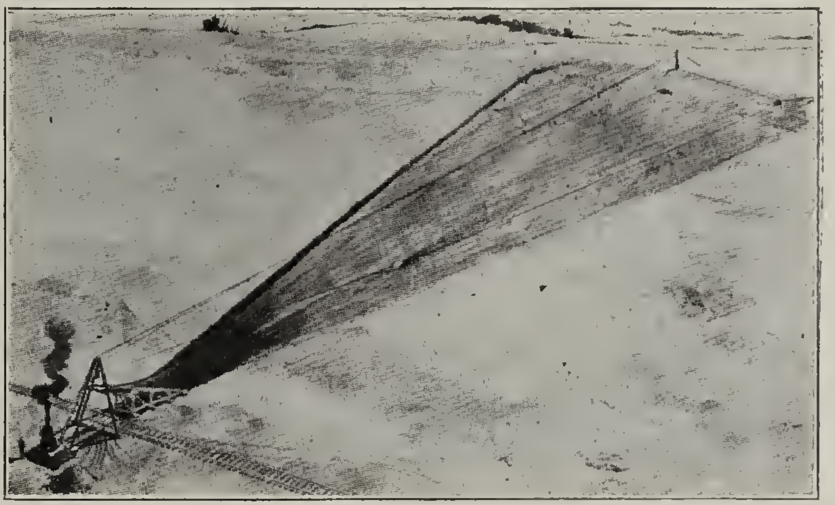
The machine consists essentially of a two-drum, especially designed haulage engine which operates a hauling cable attached to the front of the scraper and a return or tail cable, which is attached to the back of the scraper.

Two types of machines are built, type "A" being designed for loading into cars, wagons or onto a conveyor belt, and type "B", which is designed for piling or wasting material excavated. Both types are similar so far as the haulage engine and scraper are concerned, but differ as to the manner of dumping scraper.

Referring to the illustration it will be noted that the haulage engine sits back of an "A" frame supporting the sheaves carrying the various cable. In front of the "A" frame is an incline. A bar passes through the scraper body and projects on either side. The loaded scraper is pulled up the incline and in between the dumping skids, the front end of scraper dropping down, while the back end is supported by the above-mentioned bar, thus discharging automatically the load. Pulling in on the return cable then recovers the scraper and returns the same to the field.

The return or tail line is supported across the field by small sheaves carried by a standing line running from the head of the "A" frame to the tail post in field, and at the tail post the return line passes through swivel sheaves so that it can be deflected to either side of the tail post. The machine makes a triangular shaped excavation at each setting, the width of the excavation at the tail post being one-half of the span between the "A" frame and tail post. The deflection of the tail rope to either side of the tail post is accomplished through the use of a snub block secured to a heavy stake or deadman by a two part Manila rope block and fall.

To operate these machines a crew of two to three men is required—an engineer and one man in the field and where the work is steady a fireman is required for the boiler. The coal consumption averages above five pounds of good coal per yard of material removed, or, for example, a machine doing five hundred yards in ten hours consumes about 2,500 lbs. of coal. The average cost of operating runs from $6 to $8 a day for the smaller machines and $10 to $15 a day for the larger machines, which reduced to a yardage basis means from 2c to 5c per cubic yard, an extremely low figure for excavating machines of this capacity.



The Schofield-Burkett Excavator at Work.

The machines have been designed very carefully throughout, all of the parts being specially designed for the purpose and of unusually heavy proportions, so that they are a very durable, substantial outfit that can be counted on for hard continuous operation. The machines operate equally well digging under water or in dry work, and for loading sand or gravel, digging clay or earth of any kind, they offer means which have long been desired.

These machines have been on the market about three years and between seventy and eighty of them have been installed so their merits have been thoroughly proven out, and there are many places where anyone caring to investigate can see them in use.

A very important part of the new equipment at the Marshall (Texas) Brick Company's plant is the combined scraping and automatic dumping machine, furnished by the Schofield-Burkett Construction Co., of Macon, Ga. The latter company has also furnished a second machine to the Jova Brick Works, one of the largest plants making common brick on the Hudson River.

George W. Daniels, of Little Falls, Wash.; Frank Ewing, of Mt. Vernon, Wash., and C. B. Mayhew, of Laconner, Wash., have purchased the Farmers' Brick & Tile Co.'s plant at a receiver's sale. The plant is at Bay View, Wash., and will be overhauled immediately, dryers and down-draft kilns being built and $8,000 to $10,000 expended on improvements. The new company will be incorporated as the Little Falls Brick & Tile Co., and the address will be Padilla, Wash.

Boiler Scale and Its Removal

By W. B. Williams, M. E.

EVERY owner of a boiler plant, however large or small it may be, is interested in its efficiency and economy. Man's greatest agent to accomplish work is steam, and every dollar saved is as important as a dollar earned. The greatest factor and cost of producing steam is coal, but in every pound of coal burned in steam boiler furnaces only one-quarter of its energy is utilized, often less than that amount on account of imperfect combustion. In the delivery of power from the boiler to the engine another large loss is found. These unavoidable losses must be made up as far as possible by savings in other directions that can be obtained by careful supervision of many details.

Among the most important losses of power and efficiency is the presence of scale in the boilers precipitated from the feed water, as the presence of 1-16 inch of scale on the tubes or shell of any boiler has been proven to reduce the efficiency of the same 20 per cent to 30 per cent in the evaporation of water per pound of coal.

This waste is known to every engineer. In some cases it is regarded as part of the general loss or cost of steam production and but little attention is paid to it, until the accumulations assume such proportions as to seriously handicap the production of power, and then the boilers are put out of commission until the scale can be removed by mechanical means at a considerable cost of labor and time.

In most cases, however, strenuous efforts are made to prevent this formation of the objectionable scale and much money is expended in trials of various methods, or in the installation of expensive mechanical or chemical systems that only aim to give temporary relief, or put farther off the inevitable "shutting down for cleaning boilers," and frequently at such times it is found necessary to replace tubes or repair shells, piping, valves, etc., that have been corroded by the use of chemicals or distilled water.

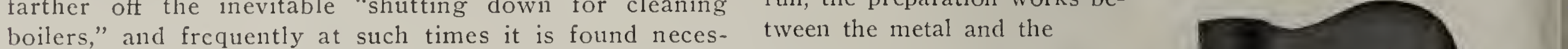
The universal practice has been to try to treat the boiler feed water, either by a softening process for the elimination of acids and alkalis by chemical compounds designed to act on the water after an analysis of the same, or by a mechanical cleaner.

In the first place, care has to be exercised not to remove all the acids or make the raw water too pure, as pure or distilled water will cause oxidation or corrosion of boiler metal as rapidly as any known agent. In the second case a water treating compound prepared from an analysis of feed water might remove or prevent scale, provided the feed water did not change with rainy or dry weather, while river or well water is subject to daily change, therefore, the compound would need to be changed correspondingly to do the most effective work. In the third case the mechanical cleaner will produce some results in accumulating a portion of the scale precipitated ingredients, but as feed water is never freed from all acid or alkali matter even when evaporated into steam, its corrosive elements are not prevented by this process.

After much research along these lines of water treatment with the main problem unsolved, a German chemist turned his attention to the matter of a metal treatment, and finally produced a chemical preparation of mechanical action, the result of which, when properly applied has solved the problem of scale removal and also scale prevention.

The German engineers, well known as pioneers in boiler efficiency and economy, after many exhaustive tests, have adopted this preparation for general use, and from there this preparation for metal treatment has spread throughout all European countries, and is now used in the United States and Canada to a considerable extent.

The action of this treatment, as stated above, is mechanical. The chemicals in solution have a strong affinity for hot metal and when the required amount for a 12-hour run is fed direct into each boiler at the commencement of the and evening on a 24-hours' day's run, or both morning run, the preparation works between the metal and the scale and by expansion breaks the bonds of adhesion, loosing the scale ready to remove at the first washout, or to be blown out in the blow-off pipe if of a porous nature.



The Wallace Auger Machine Made by the Wallace Mfg. Co., Frankfort, Ind.

The principal province of the chemical is to protect the metal of the boiler from corrosion or pitting and prevent all scale formations. This it does by covering all exposed metal surfaces with a preservative film, white in appearance when the boiler is cold. This film is as good a conductor of heat as the metal and aids in evaporation. Used in a new boiler it will eliminate oil and preserve the tubes and shell against repairs, by a small daily dose. To remove scale a larger amount is required until the metal is clean and then when the preservative film is well established the amount can be reduced to a small maintenance cost. If a boiler shell or tubes are pitted or grooved, the chemical will fill up and cover the pitting and prevent further corrosion or incrustation. Thus it is shown that this preparation becomes an investment and dividend payer in place of an expense, by increasing the evaporation of steam per pound of coal, eliminating the expense of new tubes and repairs, lengthening periods for shut downs for cleaning, saving all labor of turbining tubes and keeping boilers up to their full capacity and ready to respond to emergency calls for overload.

It is said the preparation contains no ingredients that are detrimental in any way to boiler metal, or to water or steam, as it has no action upon either metal or water, and by its use there is no harmful effect on pipe line and valves.

These Boys and Gravity Load Brick

SOME CLAY-WORKERS INSIST ON LETTING A SMALL ARMY OF MEN WITH WHEELBARROWS DO THE WORK

THIS is the story of how two boys knocked five grown men and as many wheelbarrows out of a job. It was tough on the men and wheelbarrows, but judging from the smile o fthe youths and the positive grin of the employer who foots the labor bills, the arrangement was entirely satisfactory to every one except the five men.

ONCE upon a Time there was a Brickmaker who Examined his Cash Box and found it was Shy. He had made his Wares at the Lowest Possible Cost and he had Sold All he could make at a Reasonable Profit.

The Brickmaker took another Peek into the Till but it was still Void of the Necessary Lubricant to keep the Machinery of an Ordinary Existence in Motion.

One day he was Watching a Small Army of Men pushing Wheelbarrows and he asked his Superintendent why all these People.

"That's the Army," replied the Soop.

And then it Dawned suddenly on the Brickmaker that the Army was Sifting Out the Dollars between the Kiln and the Cars so he sat himself down to Think.

Thinking does one Good, as a Rule, and the Brickmaker's case was no exception. He recalled having Read in his Favorite Trade Journal something about "Letting Gravity do the Work" and he made Some Inquiries.

A few weeks later the Brickmaker Installed a Gravity Carrier and told the Small Army to find Something Useful to do about the Plant.

And now, the Brickmaker looks into the Cash Box and finds Something worth Looking at.

NOTATION—It pays even for a brickmaker to think once in a while.

Buys Dry Press Brick Plant.

The Lock Haven Brick & Tile Co., of Lock Haven, Pa., has purchased the dry press brick plant of the Castanea Brick & Tile Co., and will convert it into a stiff mud plant and devote most of its attention to the manufacture of paving block. The new company has incorporated with C. H. Long of Mill Hall, Pa., as president, and F. C. Lucas of Lock Haven, Pa., as secretary and treasurer.

EDITORIAL SECTION

Volume XLIII. CHICAGO, JULY 15, 1913 Number 2

What the Future Promises to the Clayworker

When we look back over the few years that have intervened between the primitive methods in clayworking of yesterday and the machinery and processes of today we cannot help from marveling, because this brief span is almost within the ken of those who are pofiting by this wonderful development of the industry.

In the early history of this country the pioneer built of that material that was easiest to be had and, therefore, he drew from the boundless forests at his door.

What few who could afford to build of more lasting material—stone and brick, were forced by the exigencies of the occasion to import it from the other Nations across the seas, because clayworking was yet an untried art in the new land of promise.

With all the great forests at his command, is it any wonder the pioneer was **SLOW TO DEVELOP** an industry that is looked upon today as an **ESSENTIAL** in the economics of the country?

Is it any wonder that for nearly a century the primitive methods and machines of the less progressive Nations beyond the seas remained **UNIMPROVED** and were considered **SUFFICIENT** for the purpose?

Is it any wonder that the scientist and the mechanic received little or no encouragement?

Is it any wonder that practically no advancement was recorded until the last decade or so?

When the Yankee **DID** decide to make burned clay products, however, he was not slow to realize that methods and processes as he found them were **INADEQUATE.**

The simple hand-tempering and the slow and tedious hand moulds soon proved to be **UNEQUAL** to the increasing demands for a **GREATER** output and a **BETTER** output and slowly at first simple machines were made and slowly at first changes came in the processes.

Through the year of experiment the soft mud processes held sway, but there came a day when this was so greatly inadequate both to the clay and the demands made upon that clay that faster methods were decided necessary and soon we had the dry pressed brick and the stiff mud process.

From that day on the march of progress was rapid.

With these two processes there came a revolution in the clay product industry.

Machinery houses sprung up. Manufacturers who had responded to the cry of the times and devoted a part of their time and attention to making brick machinery, now gave all to it.

Millions of dollars are invested today in the manufacture of machinery for making brick and its allied clay products.

Inventive minds devote their entire time to designing and improving.

It would seem, from the perfection of the modern machine that we have reached the climax—that further improvement can be no more.

Still, who of us dare say we have reached our end?

Who of us who will be bold enough to deny that even **GREATER** deeds will be done—that we are but just entering upon the **THRESHOLD OF REAL ECONOMY** in manufacture?

We look at the powerful auger machines of today turning out a daily output of from 60,000 to 85,000 brick and we feel inclined to say it is impossible to do more.

And yet, our grandfathers said the same of the machines they used and so did their grandfathers say of theirs.

With the universal awakening to the necessity for using burned clay in the buildings of the Nation it is safe to wager that another decade will find even a revolution in the methods and machines of today.

We may never make a **BETTER** product than we are making today—we may never improve upon the **QUALITY**, but the increased competition will force wonder-workers in the machine—efficient.

Where we see today a column of clay speeding from an auger at the rate of 8,000 to 10,000 perfectly molded brick per hour, does it take any extra stretch of the **IMAGINATION** to see in the near future a machine that will double this output?

Does not your imagination run further and cannot you picture a machine that perhaps not only will mould 20,000 brick per hour but will turn them out dried and yea, even burned and ready for the market?

Why smile and say impossible?

Ten years ago we believed the **AIRSHIP** an **IMPOSSIBILITY** and yet man has conquered the air and so common is the flight of the man-birds in the more thickly populated sections, we cease to crane our necks when we hear the whirr of the high speed motor as it passes over our heads?

Scarcely more than a decade ago we **LAUGHED** when some zealous inventor declared he was working on plans for a horseless carriage.

And yet, today motor cars are as **COMMON** as horse-driven buggies were **THEN**.

It may be that no machine will do all that we have pictured in our imagination, but a demand for cheaper production cost is going to work a revolution in manufacture some day.

The perfected machine of today, with all its capabilities, will seem as a toy.

We will smile then as we look back on the offerings of today even as we smiled at the machine that Chambers turned out less than half a century ago.

This revolution **NECESSARILY** must be **SLOW**, for man is nearing the acme of machinery development.

And while we may look forward to even greater achievements those of us who have invested in the machines of today or who expect to buy at some early date, need have no fear that their investment will be to no purpose, for it is not likely we shall be affected.

* * *

A Quiet Tip for the Machine-Maker

Elsewhere in these pages there is an article from the pen of Ellis Lovejoy. Mr. Lovejoy, as we all know, long has enjoyed the confidence and respect of the industry with which he has been allied.

As an engineering expert to the clay-worker Mr. Lovejoy has had an exceptionally broad experience and an unusually fine opportunity to profit by this experience in the gathering of a practical knowledge.

In this article Mr. Lovejoy seeks to tell what he finds, as an engineering expert who is designing and building clay plants, is needed in the way of machinery to lessen the cost of production and to make the clayworker's life one to be desired.

Most of the devices he mentions are simple ones and can be easily manufactured.

Some may require a special inventive genius to evolve and a heavy investment to put on the market.

It is highly probable that every device he refers to will be made **SOME DAY** by **SOMEONE**, because, as he says, there is need for each and every one and the clayworker is going to demand them.

Who, of the machinery manufacturers, will take time by the forelock and get in on the ground floor?

Mr. Lovejoy has given you a quiet tip, Mr. Machinery Man.

* * *

It is better to be a good **IMITATOR** and accomplish **SOMETHING** than to wait for originality and do **NOTHING**.

Action accomplishes **SOMETHING**—it may be good or it may be evil. It depends upon the way you **ACT** what results you get.

Push, according to Webster, means "to press with force, to drive, to impel by pressure." **PUSH** is a good thing to use in your business.

All the world is a gamble. Life is a gamble. Business is a gamble. We take a chance in whatever we do—a chance to win or fail. He who does not figure on the future **LIVES** in the **PAST**. The successful man is the one that **GAMBLES WISELY**.

"Whatever you do do well." This good old advice applies just as well to the brickmaker as it does to the individual who is striving to make his mark in the world. When you make brick make good brick. Let the other fellow manufacture the poor material—you can not afford to.

New York is considering the expenditure of $20,000,000 on a gigantic sewer for the purpose of taking care of the sewage of the city and conveying it to several points where it can be treated for the removal of offensive matter before being discharged into the sea. Already the cement men **HAVE BEGUN TO FIGURE** on the proposed job. What is the **BRICKMAKER** going to do? The fact that the sewer is to be constructed under the city of Brooklyn and under the **OCEAN** for some distance gives clay products a strong talking point. Will they use it?

ANNOUNCE NEW ROCKER GRATE.

Marion Machine, Foundry & Supply Co. Get Out Boiler Equipment Line.

A complete line of rocker grates for the boiler room is to be announced shortly by the Marion Machine, Foundry & Supply Company, of Marion, Ind. The new grate is unique in that it will have four distinct and separate motions—the fore and aft rocking motion and the sidewise shearing and cutting motion, which enables the fireman to prime a fire without the use of slice bars or poker.

This concern is preparing to publish a new catalog devoted exclusively to boiler room equipment. It will be off the press by the time this issue of "Brick and Clay Record" reaches the reader and those interested in economical and efficient boiler room appliances are advised to write for same.

Burns Brick Without Grate

HERE IS A PRACTICAL DEVICE TO SAVE FUEL WHICH CUTS COSTS 25 PER CENT

By Paul Beer, C. E.

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MR. BEER is a member of the American Society of Civil Engineers, and chairman of the Smoke Abatement Commission of Des Moines, Ia., and in addition to these connections he is manager of the paving brick plant of the Barber Asphalt Paving Co. He is, therefore, peculiarly well equipped to write on the subject of fuel combustion.

UNTIL quite recently the opinion prevailed among those who use large quantities of fuel for the manufacture of power or heat, that there could be no fire without smoke. Smoking chimneys were looked upon as an indication of great industrial activity, and it was with considerable pride that the owner of a chimney which belched forth great black clouds of smoke would point out his chimney as an indication of industrial thrift. It has been known for many years that smoke formation is not a positive function of fuel combustion, but only recently have we come to believe it commercially practicable to produce heat and power with smoky fuels, without the production of smoke.

Restrictive measures against smoke production have been adopted by many cities, not with any idea of fuel conservation, but with the sole idea of abating a nuisance which not only detracts materially from the beauty of a city, but affects the peace, comfort, and health of those who live there. Any conservation of fuel which may result from these restrictive measures is incidental so far as it concerns city government, but it is a very important item to the large users of fuel.

The passage of city ordinances for smoke abatement may, therefore, quite properly be regarded as the principal reason for the great amount of study which in recent years has been devoted to the design of devices with which to accomplish smokeless combustion.

The United States government is directly interested in the smokeless combustion of fuel for two reasons:

First: Smoke abatement is a factor in the conservation of the fuel resources of the United States.

Second: Smokeless combustion is a problem which concerns the Government in its operation of naval vessels and public buildings.

Hence, the Bureau of Mines has made extended tests to determine the conditions necessary for the smokeless combustion of bituminous coal in boiler furnaces.

The average reader is prepared to admit that black smoke is not an indication of industrial thrift, but is rather an indication of economic waste.

During the process of combustion, a large amount of gases escape from the chimney. If combustion is complete, these gases may be considered as being composed of two groups:

A—Products of Complete Combustion.
B—Unused air.

These gases give no visual indication of their presence at the chimney top, yet they are the proper products of complete combustion.

Paul Beer.

If combustion is incomplete, the gases are divisible into three groups:

A—Products of Complete Combustion.
B—Unused air.
C—Products of Incomplete Combustion.

If the issuing gases from a chimney are dark in color, the color is given by minute particles of free carbon in the products of incomplete combustion. Smoke may therefore be specifically defined as the coloring matter in the combustion gases, and should not be regarded as the entire mass of escaping flue gases. When smoke is present in the flue gases, a condition of incomplete combustion necessarily exists, and the presence of invisible but combustible gases is thereby indicated. These invisible combustible gases escape up the chimney unburned, as undeveloped heat. Complete combustion is *always* attended without smoke.

Smoke is a Waste.

The production of smoke is a fruitful source of waste in fuel combustion. Perfect combustion follows a proper admixture of air with the combustible gases at such a temperature that all the hydro-carbons liberated from the coal will readily ignite.

In burning clays and shales for paving brick, fire brick, building brick, sewer pipe, tile, fireproofing, etc., the problem of fuel economics is of prime importance. In general, it may be said that bituminous coal is the only fuel which is commercially feasible, and this is, above all others, THE SMOKY FUEL. A proper device in which to burn bituminous coal to obtain a maximum of developed heat units from the coal should claim earnest attention.

To secure complete combustion and a maximum of developed heat units, several conditions must obtain.

Two Kilns, One Equipped with a Horizontal Fire Box and the Other with a Grateless Gravity Feed Fire Box.

First: The air supply must be ample and under perfect control.

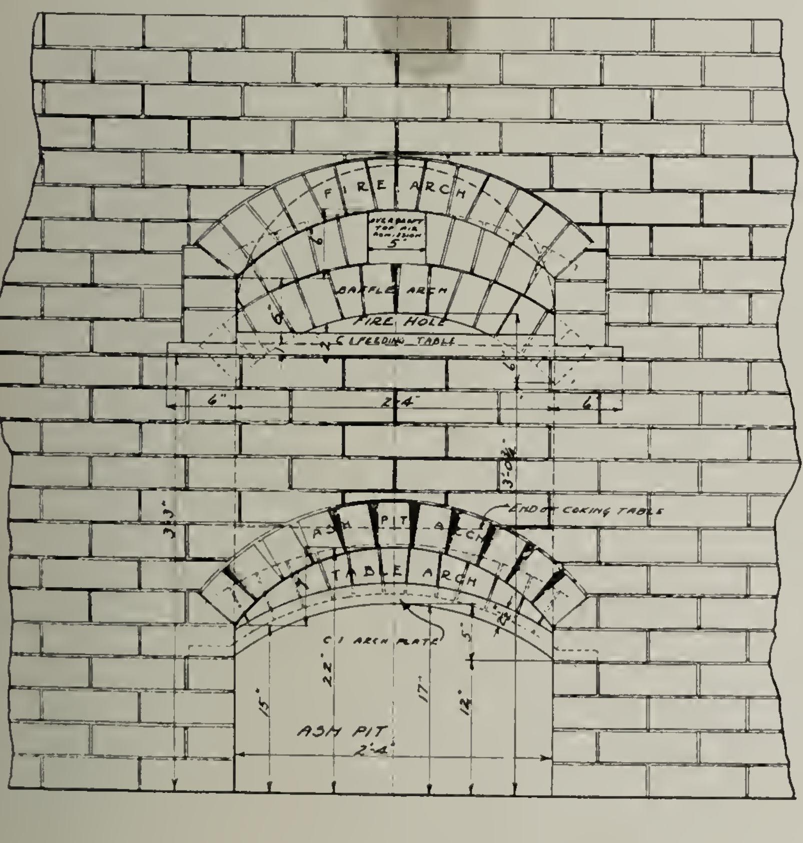
Second: The intermingling of air and fuel must be so complete that every minute particle of one comes in direct contact with every minute particle of the other.

Third: The temperature at which ignition of the fuel takes place must be maintained until combustion is complete.

The absence of any of these conditions results in imperfect combustion and consequent reduction of developed heat units, and therefore a waste of fuel.

The second condition above cited may be attained without serious difficulty. The maintenance of high temperature until combustion is complete has presented the real serious problem in furnace design.

It will be found that most devices and methods fail in developing the full value of the fuel for the following reasons:



FRONT ELEVATION
COMBUSTION CHAMBER 28" WIDE

First: Inability to constantly maintain a temperature sufficiently high to ignite the combustible gases.

Second: Lack of air control, with the result that a large excess of air may be admitted to the furnace, and a large percentage of heat thereby utilized in heating the air which might otherwise be utilized in heating the product of the kiln; or, the air supply may be below the amount required to support combustion.

The heat evolved in a furnace is utilized in three ways:

First: That absorbed by the ware (in a kiln), by the boiler (in a power plant), etc.

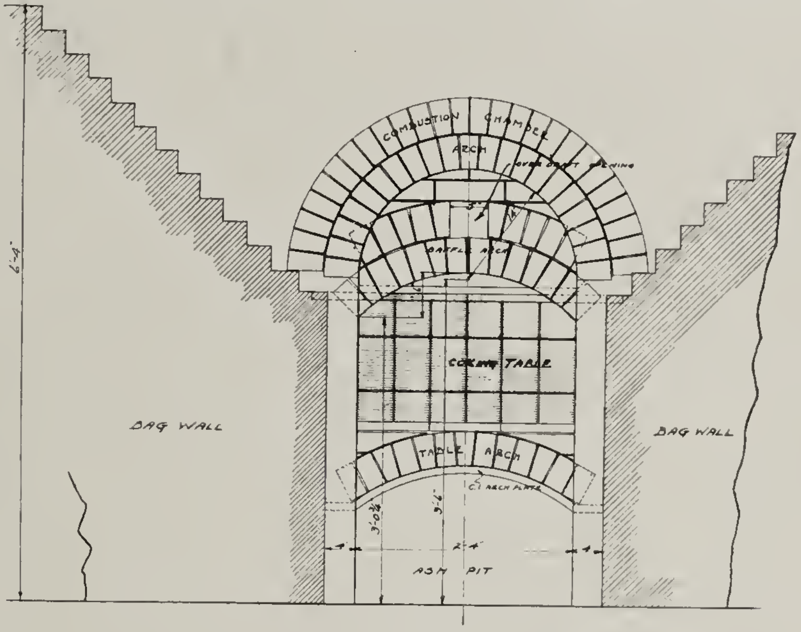
Second: That which passes up the stack.

Third: That which is lost in radiation.

Any heat undeveloped in a fuel, which escapes up the chimney as an unburned gas, is not utilized heat. Therefore, undeveloped heat represents a waste of fuel.

An excess of air, as above indicated, is also a source of fuel waste, as thereby much heat is utilized in raising the temperature of the air, which might otherwise be utilized in heating the ware. A furnace so designed and constructed that it will supply more nearly the theoretical quantity of air at the highest possible temperature for complete combustion, will be found to be the most efficient furnace and the most economic fuel user. To meet these two essential requirements, much study in furnace design has been given by combustion engineers.

In a kiln furnace, the hot fuel is ignited and made to burn by the passage of a current of air through it. This current of air supplies the oxygen necessary to effect combustion, and that portion of the air which does not chemically unite with the fuel, carries away with it the gaseous products of combustion. In order that the ware in the kiln may absorb the heat generated by combustion, the combustion gases which contain this generated heat are caused to flow with the air from the fuel bed through the ware, and thus impart heat to the ware by coming into contact with its surfaces.



HEAT EXPANSION CHAMBER

It is plainly evident that the motion of the air and of the gaseous products of combustion is very essential to the operation of a kiln furnace. It is also plainly evident and very important that, in order to effect fuel economy, the motion of both air and the gaseous products of combustion should be under complete control at all times during the process of burning. The motion of the air and the gaseous products of combustion is effected by a preponderance of pressure at some specific point of travel, as compared with some other specific point toward which it is desired the gases should move. The greater the difference in pressure between these points of travel, the higher will be the velocity of flow.

The word "draft" has been used carelessly to define the motion of gases and has also been used to define the difference in pressure which produces the motion. Insomuch as gas is a discontinuous body, it will be plainly evident there can be no such motive force as draft.

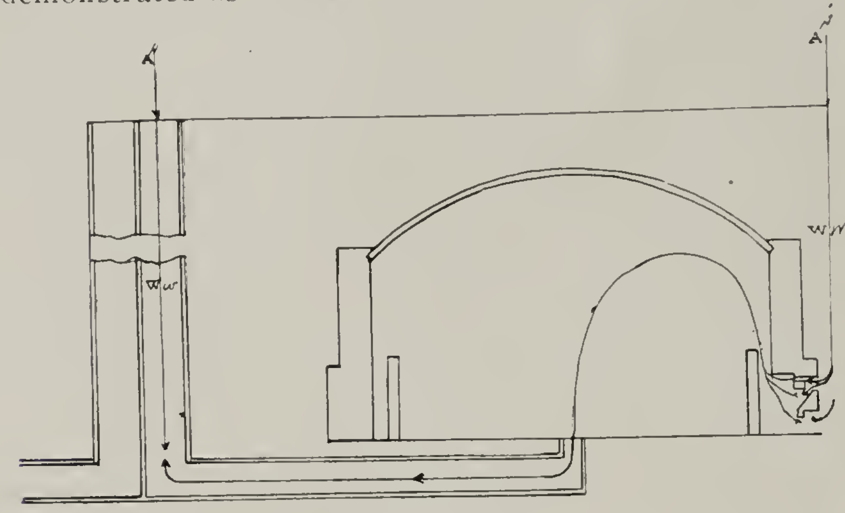
There are three possible ways of producing such differences in pressure as will cause gases to flow through the fuel bed and through the kiln.

First: By chimneys.

Second: By Induction Fans between kiln and chimney.

Third: By Pressure Fans supplying air under the fuel bed. The second method is seldom if ever used. The first is the more common method.

Gases expand when heated, hence a unit volume of hot air, plus combustion gases, weighs less than an equivalent volume of atmospheric air. The hot gases in a chimney flue, being more tenuous, exert less pressure than the air at atmospheric temperature. This may be graphically demonstrated as follows:



Let w equal weight of a volume of hot gases; let W equal weight of an equivalent volume of atmospheric air; let d equal difference between pressure in ashpit and chimney; let A equal weight of imaginary column of air above chimney; then d equals W—w; also d equals (A+W)—(A+w).

As a result of this difference in pressure, the outside air pushes through the fuel bed, where a certain portion is modified by chemical combination with the fuel, and both this and the unusued air are pushed from the fuel bed through the kiln into the chimney, and through it into the high open atmosphere, where the flue gases rapidly diffuse. The hotter the gases in the chimney, the more tenuous do they become and the greater is the difference in gas pressure as between the front of the firebox and the base of the chimney. It is also plainly evident that the higher the chimney, the greater is the difference in pressure. "With gases there is no pulling, only pushing." Gases travel from places of higher pressure to places of lower pressure, and the motion of travel results from the expansion of the gases when heated.

As previously stated, the term "draft" is indefinite being applied sometimes to the motion of gases and sometimes to the cause of the motion—that is, to the pressure difference.

A LARGE PRESSURE DROP THROUGH THE FUEL BED (or a high draft over the fire) DOES NOT NECESSARILY MEAN THAT THE RATE OF COMBUSTION IS HIGH. It is likely to mean the opposite.

HIGH PRESSURE DROP through the fuel bed always means HIGH RESISTANCE in the fuel bed to the flow of gas.

The PRESSURE DROP through the fuel bed (or the "draft" over the fire), is significant only when considered in connection with the total PRESSURE DROP.

A Remodeled Kiln Showing Installation of Grateless Gravity Feed Fire Box.

The grateless gravity feed firebox is the very latest development in kiln construction for economic fuel consumption. It is constructed of solid arched fire-resisting masonry, and contains as its principal feature, a fire brick inclined gravity feed coking table on which the fuel is burned.

The bottom air admission is through a bed of hot coals below the inclined coking table. There is no possibility of cold air reaching the burning fuel. The coking table itself becomes incandescent during the process of burning, and as the coal automatically feeds down this incandescent table, the burning fuel is at all times in a heat zone whose temperature is higher than the ignition point of the combustible elements, or combinations thereof, in the fuel.

At firing time, fresh coal is placed on a cast iron feeding plate under the fire arch and in front of the baffle arch. The coal feeds slowly and regularly down the inclined table. The fire arch, baffle arch, feeding plate, and coking table are so constructed, both in size and relative position, that it is quite impossible for a fireman to "overload" or "slug" his fires except by the exercise of prodigious and unnecessary labor. **The firebox may thus quite properly be regarded as fool proof.**

Perfect combustion is attainable in this firebox, and higher heats are therefore developed than is possible of development in a firebox where complete smokeless combustion is not attainable.

Perfect air control is one of its essential features.

Ample provision for overdraft* (or top pressure) is made through the baffle arch, and draft (or pressure) regulation is made a simple matter.

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*The term "draft" is indefinite. A brief discussion of "Draft and What it Implies" is given in the first column of this page.

Not only is it possible to develop higher heats by means of this firebox, in that the essential conditions of proper air supply and control, and proper air temperature for complete combustion are fully complied with, but it is also possible to utilize more of the developed heat units in heating the ware.

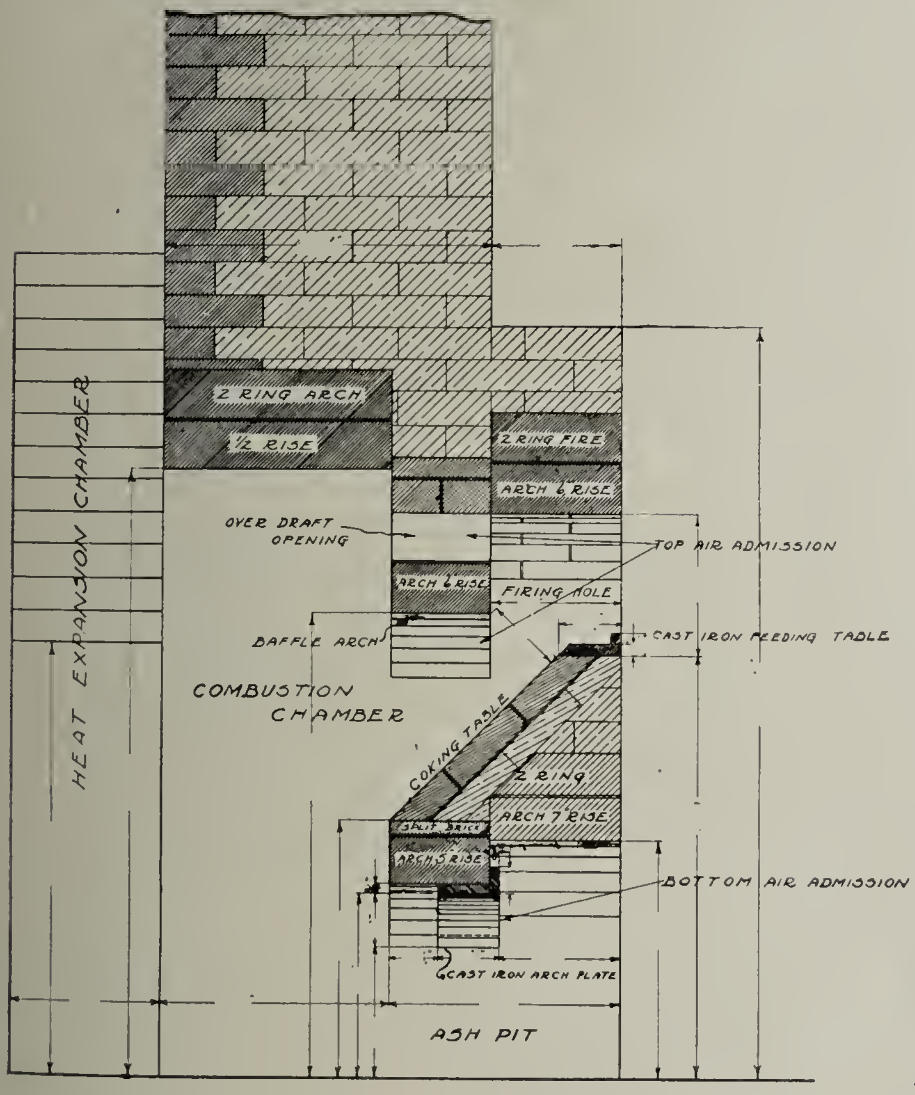
The Grateless Gravity Feed Firebox may be operated with a lower draft (or slower gas motion) than any of the kiln fireboxes now in common use, and there results from this condition **a lesser weight of effluent gases per pound of fuel burned.**

Under similar working conditions on the same plant, the Grateless Gravity Feed Firebox will show a **saving in fuel of 20% to 35%,** over such other kiln fireboxes as the Sloping or Basket Grate, Pigeon Hack, Horizontal Rigid or Shaking Grate, Horizontal Coking Furnace, Forced Draft Systems, etc. It will show a **reduction in burning time of 6% to 18%** by comparison with other kiln fireboxes. Owing to constant pressure control and evenly balanced smokeless fires, it will produce a **tougher, more cohesive, and better appearing ware.**

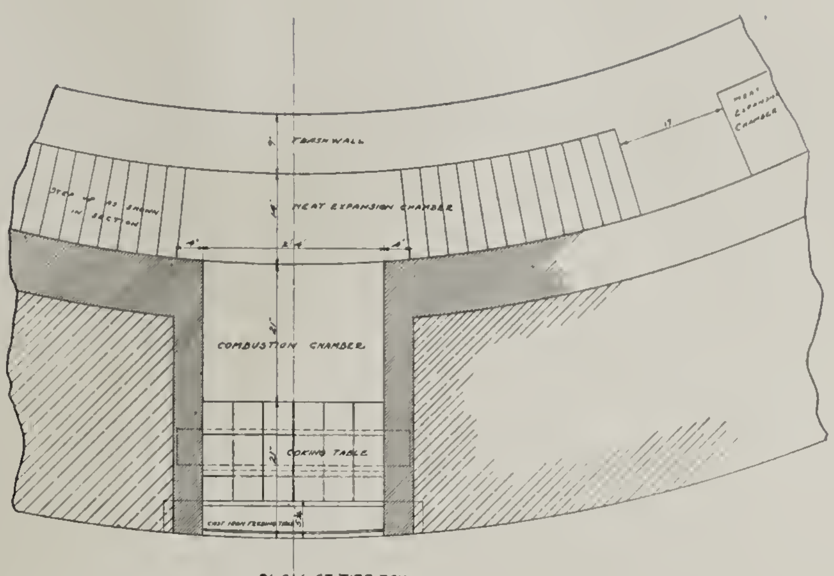
Steam or **mine run** coal may be used, where it was possible to use **only lump coal** before.

The Grateless Gravity Feed Firebox may be installed in all types of down draft kilns, up draft kilns, and direct under fired continuous kilns, with successful results.

By comparison with the slow moving gases in the Grateless Gravity Feed Firebox, the "horizontal, rigid or shaking grate firebox" requires a swift motion of air and furnace gases (or high draft) to attain high heats. This, in effect, indicates a supply of air very much in excess of that required for complete combustion. The resultant volume of furnace gases is thereby increased, and while under similar firing conditions the total heat evolved is always approximately the same for the same character and grade of fuel, the heat in this case with incomplete combustion is absorbed by a greater volume of gas than would be required under good conditions, and the resultant temperature per unit volume is therefore lower than if, with complete combustion, the gas motion were slower. Moreover, the swift moving gases over the fire, indicate an excess weight of effluent gases.



SECTION THRU FIRE BOX



PLAN OF FIRE BOX

The ware does not so quickly rise in temperature through absorption of **low temperature heat from swift flowing gases,** as through absorption of **high temperature heat** from **slow flowing gases.**

In the "Horizontal rigid or shaking grate firebox," there is too much heat utilized in

1. Heating excess air.
2. Passing through the chimney.

It requires much skill to obtain even fair results in the operation of the "Horizontal Grate Firebox."

1. The coal should be approximately uniform in size.
2. The grates should be completely covered.
3. The fuel bed should be thick or thin according as the air motion through the fuel bed is swift or slow.
4. No holes should be allowed to form in the fire.
5. Fires should not burn down before re-charging and the firing should be light and often.

It is quite plain that the human element enters most intimately into the firing of a "Horizontal rigid or shaking grate firebox." The fires are "up" and "down." An even **balanced fire** is not possible. This "up" and "down" condition is clearly shown on the recording pyrometer.

In cleaning the horizontal firebox, **practically all the fire is pulled from the box,** and the first three fires after cleaning are comparitively cool fires. As a result, the kiln loses heat.

Both loss of heat and variable heat are detrimental to the ware. **An even balanced fire will produce the best ware.**

The method of firing the Sloping or Basket Grate is more or less similar to the method of firing the Grateless Gravity Feed Firebox. On a cleaned fire, the fresh coal after firing feeds too fast on the sloping grate, and the fire is thereby cooled. After two or three firings, a clinker starts to form at the lower end of the grate (the point of greatest air pressure) and this clinker gradually increases in size upward. The point of air admission rises with the clinker and the air motion (or draft) through the fire, which started at the bottom of the grate as an under motion, finally develops into a top motion or overdraft. This "overdraft," with no "underdraft" in conjunction, requires an excess air supply to effect combustion and the same condition as to utilization of heat results from use of the sloping grate at this period, as that described under "Horizontal Grate Firebox."

The first fire after cleaning **cools** the **kiln.** The condition of **"overdraft"** with no **"underdraft"** is a **wasteful condition.**

In the Grateless Gravity Feed Firebox, no cold air strikes the burning fuel, and as a result the clinker which forms below the table is friable and porous. There is always an underdraft (or bottom air motion) through heated coils and the overdraft (or top air motion) is under absolute control. It is this feature which makes it possible to develop much higher heats in the Grateless Gravity Feed Firebox than in the sloping grate, using an equivalent weight of coal.

The **total heat units** developed in the Grateless Gravity Feed Firebox **will exceed** the **total heat units** developed in the sloping grate, with **equivalent weights** of **coal.** The **balanced pressure control** made possible in the Grateless Gravity Feed Firebox, adds still more to its efficiency.

You **lose heat** on **"cleaning fires"** in the **sloping grate.** The **"cleaning fire"** in the Grateless Gravity Feed Firebox is the **hottest of all fires.**

There is very little difference between the method of firing the "Pigeon Hack" and the method of firing the "Basket Grate." The fires in the "Pigeon Hack" are liable to be more irregular than in the "Basket Grate." In some fires the coal seems to compact and coke, while in others it will burn freely. Uniform fires in all the boxes of a given kiln, is difficult of accomplishment by use of the "Pigeon Hack" firebox. There is a fairly even comparison in fuel consumption as between the "Pigeon Hack" and "Basket Grate."

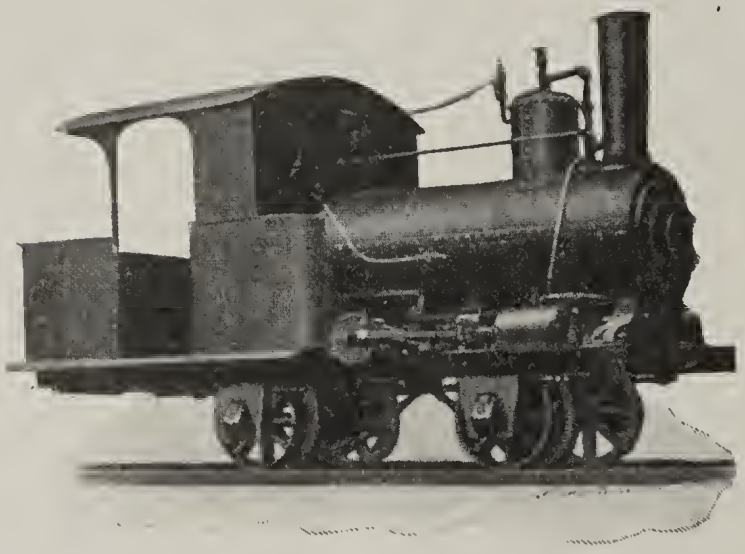
The "Pigeon Hack," like the "Basket Grate" and "Horizontal Firebox," is less efficient than the Grateless Gravity Feed Firebox.

The Grateless Gravity Feed Firebox **will develop more heat units** per pound of fuel used. **It will reduce the burning time. It will produce a tougher and more cohesive ware.**

DEWEY LOCOMOTIVE TAKES ANY GRADE.

Special Type for Clay Plants Proves Efficient and Essential.

A few years ago it was thought with the installation of trackage and a small dump car pulled by a mule or a tram hoist, the very acme of efficiency had been obtained in clay haulage from the pit. With the advent of the modern clay plant, with its large capacity and the increased demand for greater efficiency in clay haulage the clay worker began to look about for a better and more improved method of getting his clay from the pit and especially where there was a long haulage. This demand has brought out the steam locomotive and other methods of haulage.



The Dewey steam locomotive, built originally for lumber camps and similar work, was found to be the most economical engine for brick yards and it will be found pulling a train of cars in yards in every section of the country.

The Dewey engine, because of its exclusive design, is especially adapted to the clay plant and owing to its extreme lightness and its great pulling power, and its flexibility, it readily can go into and out of most any clay pit with ease. The Dewey is chain driven and will take practically any grade without effort.

Dewey Brothers, of Goldsboro, N. C., are the manufacturers of this type of locomotive and have a special catalog which they are mailing to brickmakers, upon request.

THE FERNHOLTZ DRY PRESS.

Manufacturers of This Machine Declare Misrepresentation is Criminal.

Reputations in business are builded on deeds, like those of individuals. It is customary for many houses who are seeking the trade of the consumer, to make many promises with little intention of fulfilling them.

In the brick machinery field the Fernholtz Brick Machinery Company of St. Louis, Mo., has builded an enviable reputation by advertising truthfully. The following motto, "Misrepresentation to gain money is criminal," appears in a prominent place in all their advertising. So closely has this concern kept to truthful statements it is not unusual to hear a clayworker remark, "If Fernholtz says so, then it must be true."

The Fernholtz press is made in the same manner as is the Fernholtz advertising—truthfully. There are many exclusive features about this machine and the series of advertisements that have been running in "Brick and Clay Record" of late have been of great educational value to the clayworker, as each of these features are described in detail and emphasized so that readers of this journal may get a fair idea of the highly efficient construction of the product of this well known machinery house.

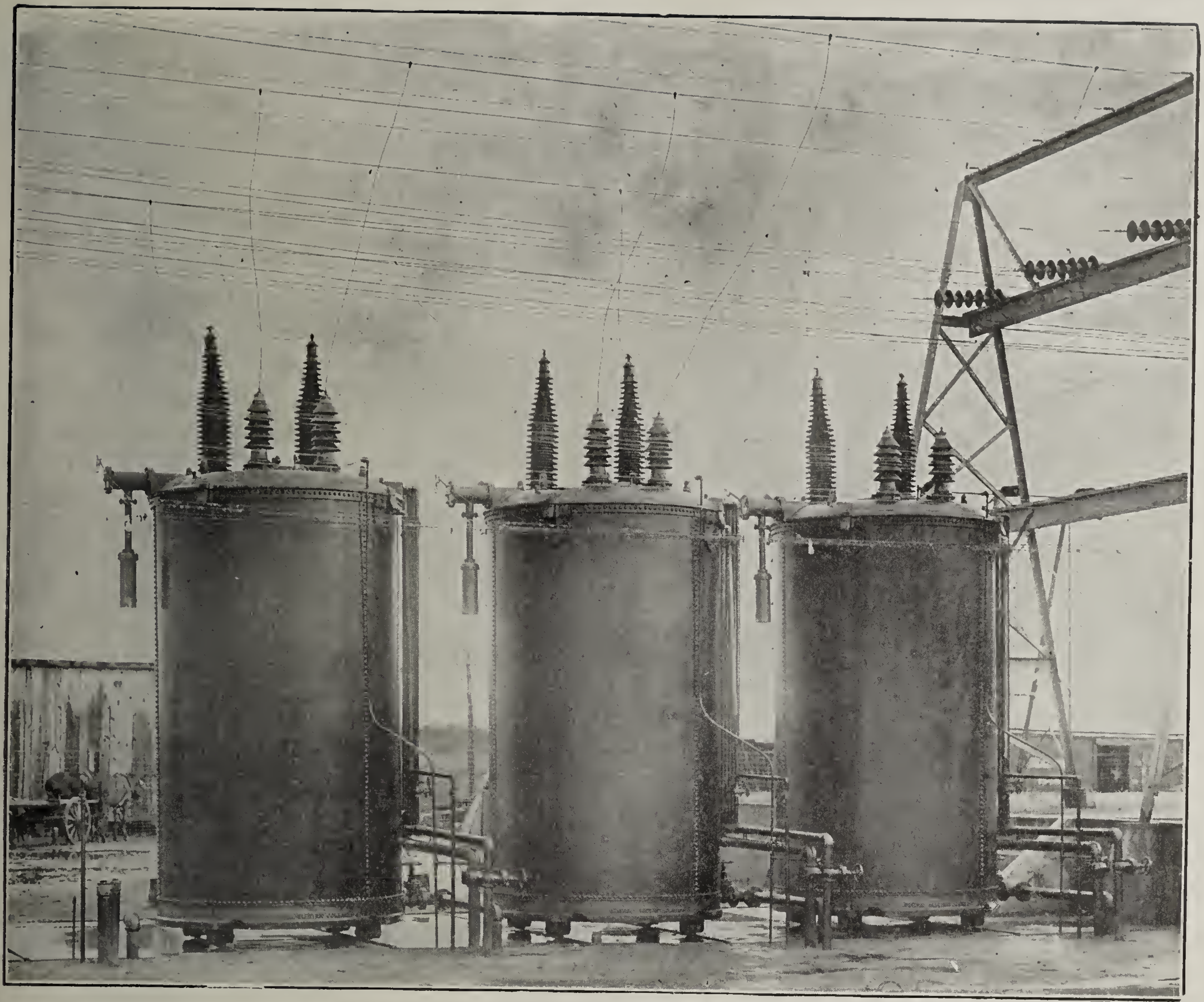
INCREASES EFFICIENCY OF PLANT.

California Company Makes Some Improvements in Installation of Crusher.

The Carquinez Brick & Tile Company of Port Costa, Cal., which some time ago solved a very difficult clay problem by the installation of a Williams patent crusher, has made some improvements in its plant, which not only increases the efficiency of the crusher but also of the entire plant. One of these improvements is a sheet iron auxiliary cover on top of the deck sweeper to keep rocks from being thrown out. Another is an automatic feeder which is driven by an auxiliary pulley bolted to the fly wheel hub.

In addition to these improvements the installation of electric power throughout the plant was made and a separate motor attached to the crushers, using a horizontal belt.

Between the upper and lower belt for driving the deck sweeper there is a small motor which drives a belt conveyor under the crusher.



Transformers for Outdoor Installation

RECENT DESIGNS MAKE CURRENT POSSIBLE IN SMALL CLAY PLANTS BECAUSE OF UTILITY AND LOW COST

By F. H. Gale

ALMOST since the dawn of the electric era small lighting transformers of comparatively low potential have been installed out of doors, and they have satisfactorily withstood the service, their superior design and construction making them proof against the fury of the elements. But no effort was made at the same time to develop a line of high tension power transformers for outdoor service, owing to the demands for power being confined to centers of population where the power stations and substations were located.

Recently, however, owing to the fact that it is often desirable to tap a high-tension line where the load is not sufficiently great to justify building a substation, high-tension transformers of all capacities and for any commercial voltage, have been designed for outdoor service. An impetus has been given to this development by the phenomenal demand for electric power made by would be consumers, located in the country along high-tension transmission lines, who realize the advantages of electricity for both power and light, but who do not require enough power to justify the expense of a substation.

The installation of the apparatus out of doors obviates the necessity of constructing new buildings or enlarging the existing station to provide room for the new apparatus, and so may greatly reduce the cost of expansion. Yet it is probable that very few persons outside of those connected with the design or sale of power transformers realize the rapid progress that has been made in the use of transformers in outdoor service and the excellent records for reliability that those installed have made.

The familiar pole type transformers used on city distribution circuits having a potential of from 2,300 to 4,000 volts.

are comparatively simple to design for outdoor service on account of the relatively low voltage. Standard transformers, in capacities of from 1 to 100 kv-a., are readily obtainable for this class of service, and all sizes embody practically the same construction with the exception of the tanks.

The core for these transformers, as built by the General Electric Company, is made up of four magnetic circuits of equal reluctance placed in multiple. As a result of the use of a thick mica shield between the primary and secondary windings, the highest degree of safety, which is the most important characteristic of a transformer, is obtained. This mica shield is designed to withstand a potential of from 15,000 to 20,000 volts, and is practically indestructible when used on circuits having voltages around 2,500.

An abundance of oil ducts and channels, through which the circulation of oil is maintained, results in uniform temperature throughout the transformer and eliminates the detrimental effects of unequal expansion in the coils with consequent rubbing and injury to the insulation.

Transformers below 25 kv-a. capacity are placed in smooth cast iron tanks. Above this size the tanks are corrugated in order to obtain sufficient surface for radiation of the heat generated within the transformer due to the losses. The largest two sizes, if made of cast iron, would be too heavy and bulky for suspending on poles, so they are made of corrugated sheet steel. For operating on poles in the open and on the walls of buildings under the eaves, the tanks that contain these transformers must be weather-proof. The cast-iron covers are, therefore, provided with overhanging edges and the joint between cover and tank is sealed by a gasket effectively preventing the entrance of moisture and dust, two things to be avoided.

Power transformers, 100 to 500 kv-a. for distributing potentials (2,300-6,000) and all transformers above 6,000 volts up to 500 kv-a., employ a different type of construction than the distributing transformers above described. In these transformers the straight two-legged core type construction is employed. The core consists of two vertical legs connected together at the top and bottom by yokes, thus forming a rectangle.

Power transformers for all voltages may be self-cooled or water-cooled. In self-cooled transformers the heat arising from the losses in the transformer is dissipated into the surrounding air by providing a tank with sufficient external radiating surface to limit the temperature inside the transformer to a safe value.

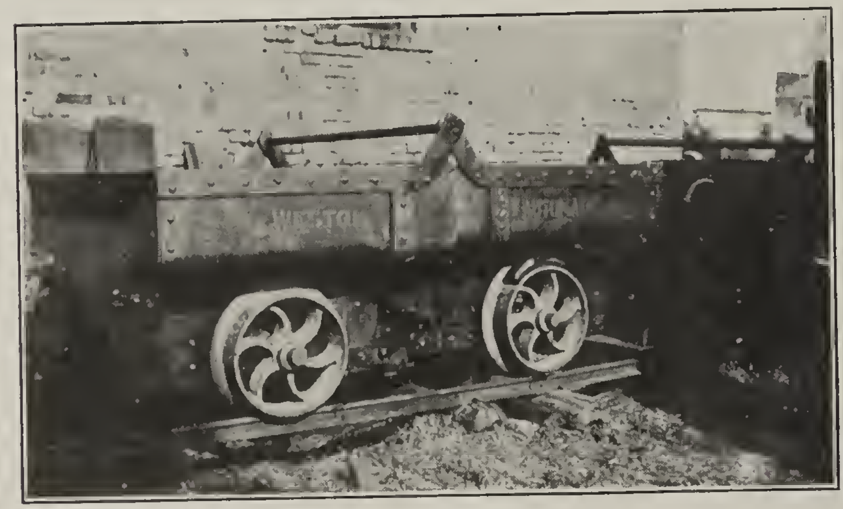
Transformers having a capacity greater than 500 kv-a. are built of the shell type, i. e., the core surrounds the windings, which is in direct contrast to the core type, where the windings surround the core.

Self-cooled shell-type transformers are not built in capacities much above 3,000 kv-a. because of the large and expensive tank construction necessary to obtain sufficient radiating surface.

The majority of transformers above 1,000 or 1,500 kv-a., are water-cooled. The tanks for water-cooled transformers are made from heavy boiler plate, being round for single-phase transformers and elliptical for three-phase units. They are perfectly plain and smoth, having no corrugations or pipes, which are unnecessary in this type of transformer. All these various tanks are designed for outdoor use when furnished with a suitable cover, gasket and leads.

Three large water-cooled transformers, 2,750 kv-a. each, have recently been designed for outdoor operation on a 110,000 volt circuit. These are in successful operation at the present time. Some 1,000 kv-a. self-cooled transformers in tubular tanks are also in successful operation cut down on a 110,000 volt circuit.

Improved Clay Car Means Economy



Successful manufacturing means close attention to details. It is not enough for a brickmaker to develop efficiency in the great things about his plant. He must carry the work into every department, even down to the most trivial matter, for ofttimes the difference between profit and loss lies in the least suspected place.

As as illustration of the point, take clay haulage. Many clayworkers figure that with the installation of an elaborate transportation system, which may include the most improved electric or steam locomotive, he has done all that is to be done. Any car will answer, so long as it holds clay, and will convey it, he argues, and so satisfied he has builded well, any sort of car is installed.

Economic ideas however, may be applied even to the clay car. C. J. Weston, an Iowa inventor, has shown this in the automatic dump car that bears his name and the Weston car has several very strong features about it which tend to lessen the cost of clay haulage from the pit. First of all there is its automatic dumping features. It is so constructed that it breaks in the center and permits the clay to drop through the track. The wheels being nearer the end than the center of the car, the load in each half overbalances it toward the center and the forward and rear wheels travel from each other as the halves of the car tip, making a large opening at the bottom through which the dirt drops out.

The size of the wheels and the dimensions of the several parts of the car body enter into the calculation of the dumping angle, which is never less than forty-five degrees unless so ordered. At this angle, the clay slides out freely, more freely in fact than from cars now in general use. When the car has been dumped, the operator can bring it back into hauling and loading position by placing a foot on the coupling device and throwing enough of his own weight on that foot to bring the car back to its former position. Then, after throwing the crank shaft back and engaging it with the safety hook, the car is ready for a load.

It is further possible to dump, erect and back the car by drawing it over a trip stand and erecting roller, thus saving the wages of a man in the clay storage shed as well as time in dumping and erecting the car.

Another feature that works for efficiency and, therefore economy is the minimum height coupled with maximum capacity. Workmen can load more readily when they do not have to lift a shovel of clay so far.

Pioneer Drain Tile Machine Manufacturer

BREWER & CO., MANUFACTURE FIRST EQUIPMENT HALF A CENTURY AGO WRITES ONE OF FIRM WHO TELLS OF INDUSTRY

By Charles Burridge

Secretary H. W. Brewer & Co.

BREWER & COMPANY of Tecumseh, Mich., claim to be the oldest manufacturers of drain tile equipment and, in fact, of clay working machinery in general, in the United States. This concern further claims to have made the first successful commercial drain tile machine ever produced in this country. This was about fifty years ago and they have been building drain tile and other clay working machines ever since, constantly improving the old designs and adding new ones to keep pace with the demands of the trade.

Fifty years ago a complete outfit of clay working machinery for a drain tile plant could be loaded upon a single wagon and hauled overland a hundred miles or so, and represented a cost of about $1,000; but the drain tile maker of today, with the aid of a much greater amount of equipment at a much lower comparative cost, produces in a single day an output equal to the entire season's run of the pioneer.

Brewer Drain Tile Machines now represent three distinct types; the upright pattern, the horizontal pattern, and the down delivery pattern for large tile. The upright machine incorporates a feature, very valuable if not an imperative necessity in some clays, of holding the cores of the tile dies without bridge or bracket or anything of that nature which parts the clay just as it is being formed into shape and results in the tendency of the tile to crack lengthwise. Space will not permit the explanation of this device here but the Brewer catalog covers the point thoroughly. Another feature of the upright machines is the great pugging capacity which the vertical cylinder affords, and which is of great value in plants where little additional clay preparing machinery is used. These machines make all sizes of tile up to and including 18 or 20 inch and are built in five sizes, the largest of which is the No. 10B.

The horizontal machines also have particular points in connection with their make-up which render them superior in many cases. They are forming, moulding, or expressing machines exclusively; have no particular pugging capacity of their own, and are used in those clays, the nature of which permits the use of the bridge or spider for holding the cores. They are equipped with removable and adjustable liners which surround the entire length of the auger, with feed rolls which keep the hoppers clear, self-oiling bearings and either cut gears, enclosed and running in oil, or cast gears running open, at the option of the purchaser. The No. 88 machine represents the former, while the No. 98 is of the cast gear pattern. They make all sizes from 3 to 20 inch and may be supplied with either large or small augers depending on the requirements of the individual case.

The down delivery machine is for large tile only, starting at the 10-inch, or preferably the 14-inch size, and going up to and including 30-inch. It is furnished either with or without the bridge for holding the cores of the tile dies and has a capacity equal to the amount of ware which can be taken away from it. The construction is along the same lines as the upright machines with the different parts so arranged that the issuing column is upon a vertical instead of a horizontal line.

In connection with the machines for the smaller sizes the No. 77 Automatic Tile Cutter furnishes the means for rapidly and accurately cutting the column. This machine differs from all others of its kind in that it has no guide arms connected with the moving chain of carriers which interfere with the convenient and rapid removal of the ware after it has been cut, also in that the chain of carriers and the cutting reel are geared together so that they cannot get out of time with each other. In addition, it has a rapid raising and lowering device by means of which the machine is adjusted to the proper height when changing from one size to another, as well as the large wheels by means of which it is easily moved to and from its position in front of the machine. The construction is of high grade with particular attention given to points of durability and ease of repair. It cuts all sizes up to and including 8-inch and its work is particularly accurate.

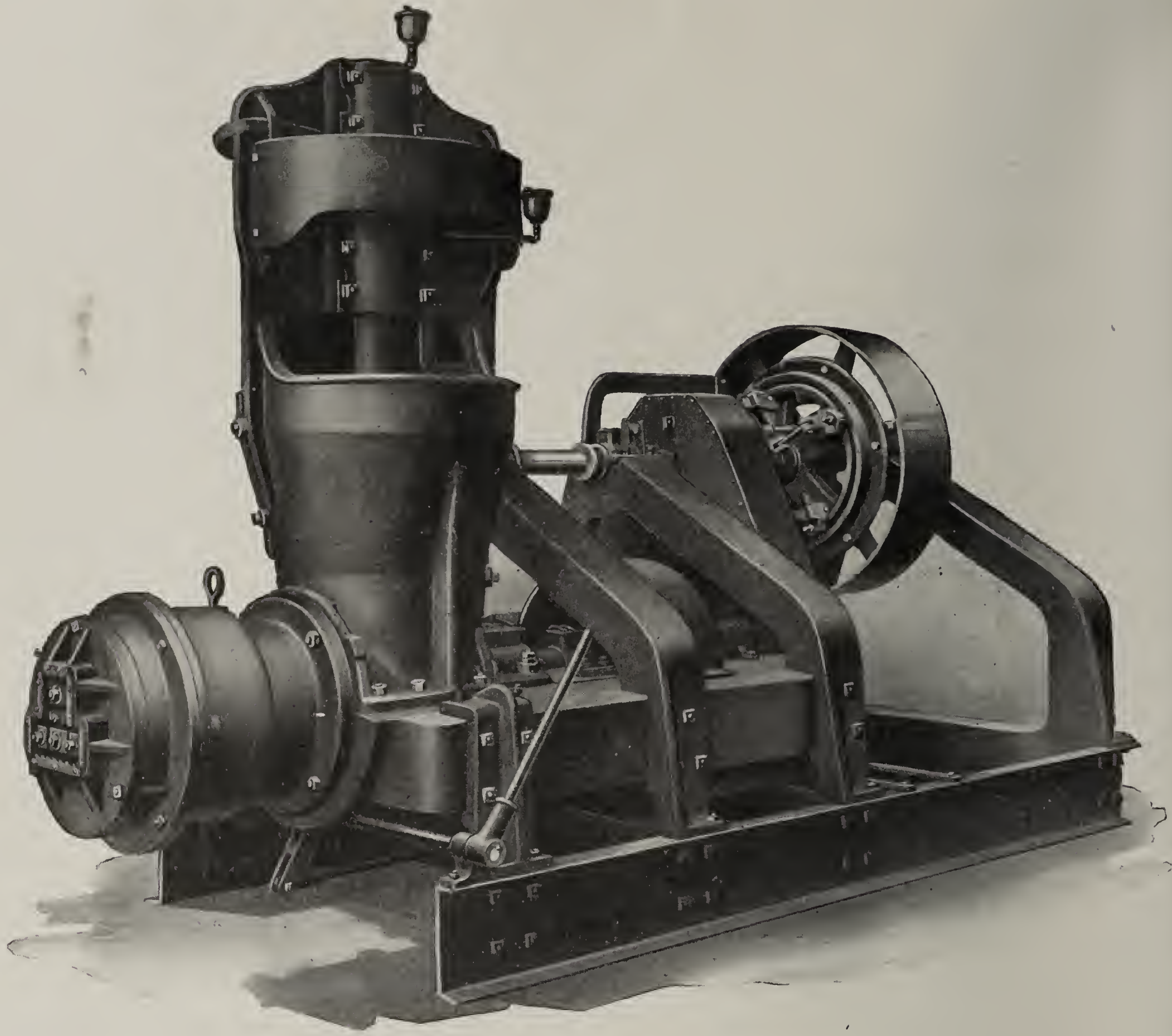
For the sizes above 8-inch hand cutters are usually employed and the Brewer line includes a number of different machines for the purpose, one of which, the No. 87 Rotary Dumping Cutter, is particularly worthy of note. This machine easily takes care of fifteen pieces of double length tile per minute and undoubtedly brings about a condition wherein all sizes smaller than 14-inch are more rapidly produced on a machine with horizontal delivery than upon the down delivery machine.

The fire-proofing machines of the Brewer line are represented by No. 10C which is the largest size with a rated capacity of 150 tons per day. It is a machine which has been developed in one of the largest fire-proofing plants in the country and has produced the smaller and more difficult sizes at the rate of over 200 tons per day. It is supplied with removable and adjustable liners for the horizontal augers and combines the unusually good character of the ware produced by the upright machine with the high efficiency and large capacity of the horizontal machine.

In connection with drain-tile and hollow-ware equipment, of course we must not fail to mention in regard to the Brewer line such machines as granulators, pug mills, feeders, crushers, disintegrators, dry pans, elevators, screens, hoists, conveyors, automatic brick cutters, sanders and the like, all of which are produced along the same lines of strength, weight and high grade construction represented by the machines shown herewith.

Although specializing to a great extent in the drain tile and fire-proofing lines the Brewer Company does not overlook the opportunities which are afforded in the direction of equipment for the manufacture of brick, and produces many patterns of brick machines adapted to large and small capacities and to the great variety of conditions which are present in American and foreign markets. The factory is one of the newest and largest in the United States and is equipped with machinery and tools of the latest design which together with an old and loyal organization in both factory and office makes possible the execution of their well known phrase, "If marked Brewer it's Good."

Among the recent installations of the Brewer Company are the following: Slater Exchange Brick Co., Miles City, Mont.;



Brewer No. 10C Drain Tile Machine.

Sprang Clay Product Co., 2 plants, Sheldon and Aboite, Ind.; Bunte Bros., Flat Rock, Mich.; Jenkins Brick Co., Montgomery, Ala.; Corwith (Ia.) Brick & Tile Co.; L. B. Pierce, Winfield, Ia.; Fort Wayne (Ind.) Tile Co.; Fraser Brick Co., Dallas, Texas; Colechester (Ill.) Brick & Tile Co.; B. Jasperson, Coatsworth, Ont.; Columbus Grove (O.) Brick & Tile Co.; Angerer Clay Prod. Co., Maybee, Mich.; L. C. Whittet, Edgerton, Wis.; Brunswick (Mo.) Brick & Tile Co.; American Clay Prod. Co., Roanoke, Ill.; American Brick & Tile Co., Waynesboro, Miss.; Kasten-Schmuke Pressed Brick Co., Jackson, Mo.; Allen & Shultz, Waynesfield, Ohio; Salveson Brothers, Petersburg, Ill.

PERFORATED METAL SCREENS SUCCESSFUL.

Designed to Meet Special Conditions in Clayworking Plants, They Give Practical Service with All Clays.

With various sizes and shapes of perforation, the Hendrick Perforated Metal Screens are prepared to take care of all sorts of clay, either before or after it is ground, allowing a maximum percentage of usable material to go to the next point of manufacture, while safely segregating the portion that is to be discarded or subjected to further preparation. The rigidity of this type of screen makes it of exceptional value with heavy materials like fire clay and shale, and will be found to be, in many instances, the only type of screen that is efficient and economical. It is made by the Hendrick Mfg. Co., Carbondale, Pa.

FATES INSTALL GEAR-CUTTING MACHINE.

Import Special Equipment From Germany to Make Gears of Large Diameter.

The J. D. Fate Co. of Plymouth, Ohio, has just installed a gear hobber which will cut a gear as large as 72 in. in diameter with a 20 in. face. This machine was imported from Germany and is manufactured by H. Pfauter, whose address is Chemnitz. The machine costs about $6,000 and is one of the highest types of mechanical construction.

All of the pinions and practically all of the gears will be cut upon this machine, which means a great saving in the matter of power when the machine is installed in the clay products plants.

PREVENT CONDENSATION IN DRYER COILS.

"Detroit" Return Trap Makes Dryers Work to Capacity and Insures Evenly Maintained Temperature.

Through waste of energy, heat units or labor, the clayworker loses many dollars yearly. By the utilization of every ounce of power or heat or of every working minute of labor, losing enterprises are transformed into paying propositions. At no point in the brickmaking plant which uses a steam heated dryer, is so much lost as in the steam coils, through condensation.

To completely overcome this, the American Blower Co., of Detroit, Mich., offers the "Detroit" return trap, which makes it possible to keep your dryers "up to capacity" all of the time, by keeping the coils clear and free from condensation, which, if allowed to collect, kills the heat value of the new, incoming steam.

"Detroit" traps save 90 per cent of the steam required to operate a pump. Every operation is automatic and every working part is outside and interchangeable. There is nothing on the outside of the tank to rust, corrode, stick or give trouble. Steam and air valves are in the same cast-iron body (renewable disc) and a bumper at one end of the trap receives the full weight of the water as the tank tilts, relieving the stress on the trunnion and eliminating the usual smash and bang so common to other traps.

If your dryer is not doing its work, write to the American Blower Co., at Detroit, and your trouble will be given careful consideration by its steam trap department.

AERIAL WIRE ROPE TRAMWAYS.

A Necessity in Plants Where Transportation Meets Unusual Difficulties in Grade and Bottom.

The Broderick & Bascom Rope Co., of St. Louis, Mo., experts in transportation by aerial tramways, is installing its system in many clayworking plants that would be unable to handle their clay with any degree of economy, were it not for the ease with which great loads can be carried long distances, without being subjected to the expense of up-hill traction and down-grade hold backs.

On one plant, a B. & B. automatic aerial wire rope tramway transports 800 tons daily, a distance of 1,300 feet, at a cost of less than one cent per ton. It is equipped with G. & S. patent automatic self-dumping, self-righting and self-locking buckets, and a full description of the outfit, or of an outfit that will meet your particular requirements, will be furnished you, if you will write either to Broderick & Bascom's St. Louis office, or to either of its branch offices, one of which is in New York and the other in Seattle, Wash.

RAYMONDS INTRODUCE NEW PULLEY.

Place on Market Device That Fills a "Long-Felt Want," According to Claims.

The mechanical department of the C. W. Raymond Co. has designed a new friction clutch pulley that is said to solve pulley problems in the clay plant. This new pulley has an enormous clutching power which exceeds the strength of the heaviest shaftings—and yet, when working on a full load, the pulley can easily be operated by a child.

By the use of these pulleys in your plant, you will save many dollars that you are now losing in wasted time and effort.

GERMAN EXPERT PRESENTS EXCELLENT KILN.

Regenerative Continuous Tunnel Kiln Embodies Many Economies in Burning Brick and Tile.

In no department of clayworking is so great an advance, so complete a revolution, as is taking place in the construction of kilns. The growing scarcity of fuel and the consequent increase of cost, is creating a demand for new ideas and new types, that economy in use may offset increase in cost per ton.

George Van Vater, a kiln expert, who received much of his training in Europe, where the continuous kiln received its earliest recognition, presents to the American clayworker, through the Gas Machinery Co. of Cleveland, Ohio, a regenerative continuous tunnel kiln that has many points which recommend it to prospective clayworkers or to those who are about to make changes in their present process of burning.

Inquiries addressed to the Gas Machinery Co. of Cleveland will receive prompt attention and the process that is made possible by the installation of this kiln is one that merits careful consideration.

AN ESSENTIAL PART OF ELECTRIC EQUIPMENT.

Double Track Transfer Cars Supply Necessary Link in Transportation Chain.

Complete electric equipment means a great deal more than the average brickmaker has any idea of. Not only the motors and locomotives are needed, but electrically driven transfer cars, capable of carrying heavily loaded triple deck dryer cars, loaded with green ware, are called for, if the equipment is to be complete.

The Atlas Car & Manufacturing Co., of Cleveland, Ohio, is prepared to figure on complete electric equipments, including storage battery locomotives, in various sizes, double and triple deck dryer cars, ball bearing turntables, double track electric transfer cars, rocker side and end dump cars and steel quarry cars, its line including all of the equipment necessary to handle clay from the point where it is harvested, to the plant—to take the green ware from the presses to the dryer and kilns, and then the finished ware to the shed or cars in which it is to be transported to far distant markets.

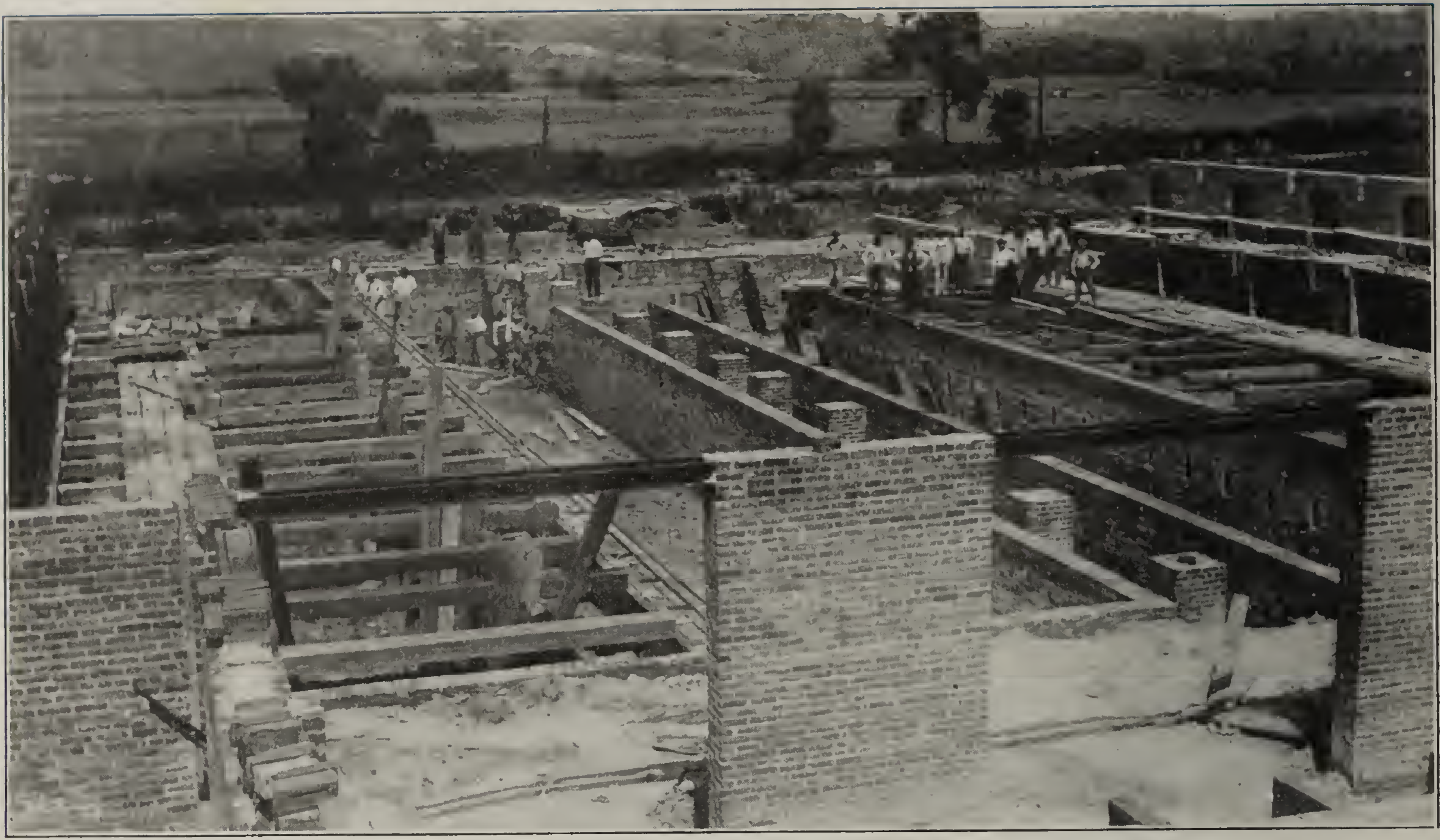
It is idle to point out that a complete equipment is more economical than one bought piecemeal.

LIGHT STEEL RAILS FOR CLAYWORKERS.

Made in the Heart of a Clayworking District, Thus Assuring Prompt Delivery and Minimum Shutdown.

No trouble is quite so annoying—nor expensive—as that caused by irregular trackage. No matter what system of traction you may employ,—man, horse, mule, motor or locomotive—if the tracks be defective, it means loss of product, time, money and temper.

The Buckeye Rolling Mill Co., with mills at Newark, Ohio, and offices in Steubenville, in the same state, carry all sections, from 12 to 40 lbs. to the yard, in stock, ready for immediate shipment. A telegram to the office or works will bring a prompt response that may enable you to make a repair before severe damage is done. This concern, manufacturing first quality light steel rails and accessories exclusively, is in shape to take care of small orders as promptly as larger ones, and, since it has a large clientele among clayworkers, understands their especial needs.



Constructing a Klose Kiln for the Towle Brick Company of Cleveland, Ohio.

The New Klose Kiln in Operation

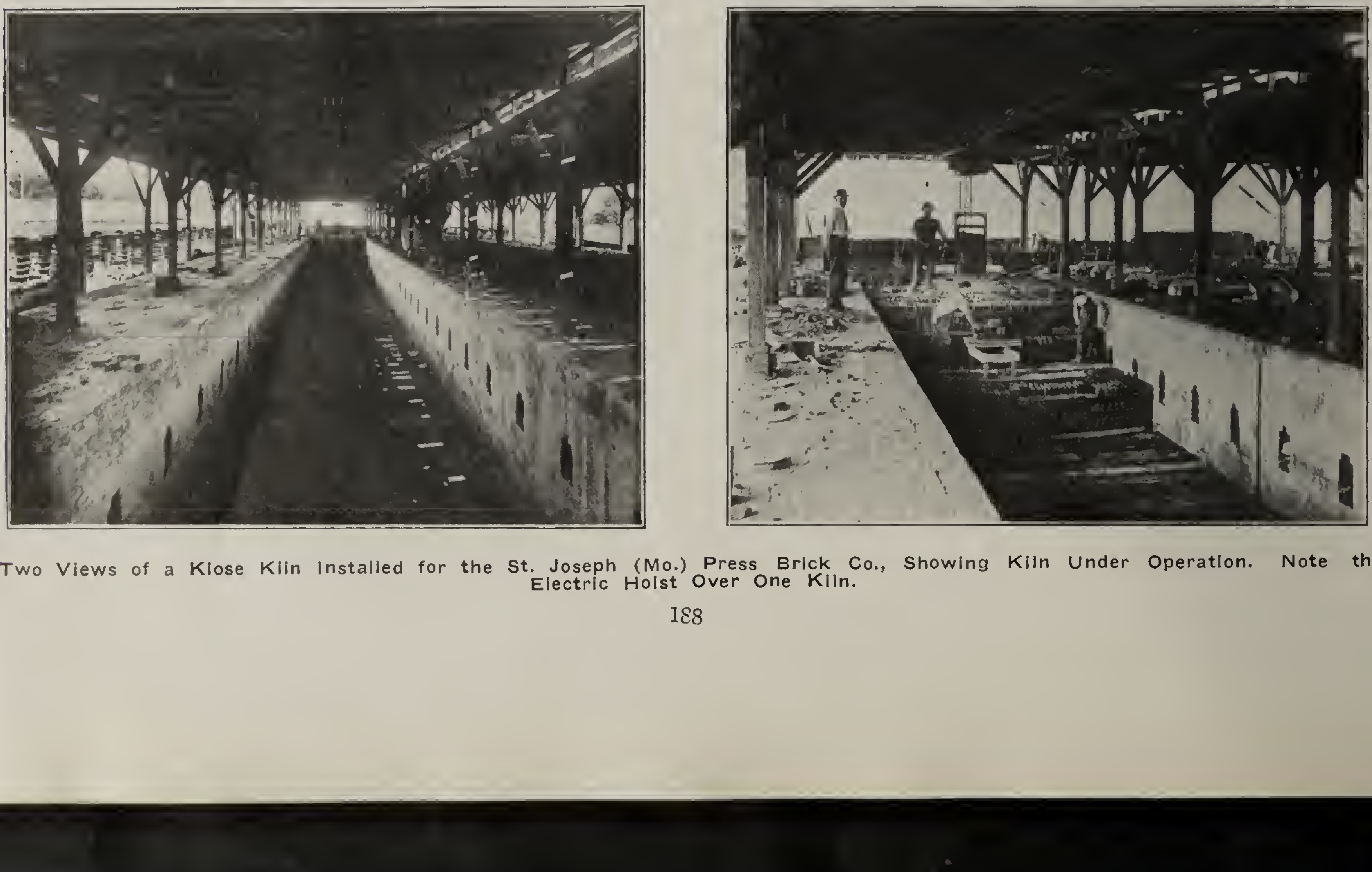
Nothing in the clay product field has created more interest than the introduction of the Klose Kiln by the Denison Ceramic Engineering Company little more than six months ago. It was such a radical departure from the usual type of continuous tunnel kiln and its inventor, Mr. H. W. Klose, and its sponsors, the Denison Company, made such emphatic claims for its economy in construction and maintenance, many were inclined to look upon it with suspicion.

This is the usual treatment given anything that tends to revolutionize methods and neither Mr. Denison nor Mr. Klose felt alarmed.

Since several of the kilns have been installed and their practicability proven clayworkers need no longer look upon the proposition with suspicion.

"Brick and Clay Record" presents illustrations of some of the recent installations of the Klose kiln. The picture at the top of this page was taken during the construction of a kiln for the Towle Brick Company of Cleveland, Ohio. The kiln is shown in the center. The walls in the foreground are those of the factory building.

The illustrations below show two views of the Klose kiln constructed for the St. Joseph, (Mo.) Press Brick Company. This kiln is in operation and giving excellent satisfaction.



Two Views of a Klose Kiln Installed for the St. Joseph (Mo.) Press Brick Co., Showing Kiln Under Operation. Note the Electric Hoist Over One Kiln.

SOLVES LOCAL DELIVERY PROBLEM.

Martinsburg Brick Wagon is the Last Word in Delivery Equipment and Saves Labor at Important Point.

The ideal market—the one that every clayworker hopes to develop, is local. If he make pressed brick, the outlet for his culls is the local demand for "builders" and, to take care of that demand, he must have a complete delivery system. If a "common" brick manufacturer, his local demand is by far the greatest, and here, again, he must do his own delivering.

The cost of teaming brick to the building site is very frequently an unknown quantity to the brickmaker, but he will admit that it is out of all proportion to the cost of the various steps of manufacture. He stands the present cost, because he has never known any way of cutting it down.

With the advent of the Martinsburg Brick Wagon, made by the Auburn Wagon Company, of Martinsburg, West Va., comes a point where part of the delivery cost may be saved, and, if the horses and driver can, through the ease of unloading, be enabled to make an extra load a day, it means just that much time saved to the brickmaker. In addition to the saving in time and labor is the fact that with this wagon, the load can be slid out without chipping a brick—a little ingenuity and care will make it possible to deliver facing brick with as little expense as "commons". The wagons have a capacity of 1,400 to 2,000 brick and have proven their value.

HAS WIDE FIELD OF USEFULNESS.

The Henry Martin Brick Machine Co. Serves Yards Employing Various Processes.

Serving a wide field of usefulness among clayworkers, the Henry Martin Brick Machine Manufacturing Co., of Lancaster, Pa., exploits no particular process, but makes machinery that will do the work, by any process suggested, and do it economically and well.

Manufacturing machinery for both soft-mud and stiff-mud brick and clayware, making both dry and wet pans, barrows, trucks, disintegrators, clay cars, dryer cars, hoisting drums and all manner of brick yard supplies, it is an odd repair or a crooked corner that the "Martin Line" cannot take care of, promptly, cheaply and when "put", it will "stay put."

It publishes a catalogue that is a clayworker's guide to good machinery and a price list that points the way to saving, when it comes to putting out real money for machinery, equipment or supplies. Works and office are at Lancaster, Pa.

THE DUPUY SOFT MUD BRICK MACHINE.

Makes Seven Brick With Each Stroke and Automatically Dumps the Moulds.

The Dupuy Soft Mud Brick Machine, made by the C. O. Bartlett & Snow Company of Cleveland, Ohio, is one of the highest types of this style of brick machines. In connection with the automatic dumper and the gravity conveyor the greatest efficiency possible in a soft mud brick plant is to be had.

The "Dupuy" makes seven brick instead of six with each stroke. The automatic dumper takes the moulds direct from the machine, dumps them on the pallets, sands the moulds and returns them to the machine, all this being done automatically. It has a daily capacity of 50,000.

A DISTINCT IMPROVEMENT IN DRYPANS.

The "Eagle," With Independent and Suspended Mullers, Marks an Era in Important Equipment.

Pan capacity is the basis of yard capacity. If the pans cannot grind enough clay to keep the machines going, the output is less than marked capacity, meaning an unsatisfactory showing when production is compared to overhead. In many yards it is necessary to run the pans overtime, and so stock up on ground clay, and this overtime extends to labor in the boiler and engine room, as well as at the pan itself.

The "Eagle" Dry Pan, manufactured by the Eagle Iron Works of Des Moines, Iowa, has many distinctive points of merit, and should be seen (or catalogues read) by every clayworker who is not satisfied that his pans are doing as much work for him, with as little labor, as he would wish them to. If your pan capacity is not all you would like it to be, a card to the Eagle Iron Works will bring you some information that may mean a great deal to you, when you make up your annual statement.

DRYER CARS OF EXCEPTIONAL QUALITY.

Folding Deck a Strong Feature in This Important Part of the Equipment of a Clayworking Plant.

When competitive conditions make it imperative that a clayworker should demand value received for every dollar's worth of outlay on the plant, and the cost of dryer cars is an item that enters into his consideration, it would be well to take the matter up with a concern that has made a specialty of this part of the clayworker's equipment, and see for himself the sort of car they can build him, and the extremely reasonable price they charge him for the service.

Combining new lines with exceptional strength, these cars will give the best of service under the most trying conditions, never sagging or failing at the most trying times. The folding deck is a decided improvement over the old style deck, and makes loading and unloading much easier, so saving in labor and time—two very important items on the average brick plant.

The manufacturers, the Electric Locomotive & Car Co., of West Park, Ohio, solicit correspondence on the subject.

IGNORES WATER, STEAM AND HEAT.

Gandy Belting Not Affected by Time, Wear, Conditions of Installation or Atmospheric Changes.

Thirty-six years in the manufacture of belting have given the makers of Gandy belts a reputation that is hard to equal; thirty-six years of good service have given Gandy belts a standing that cannot be assailed. Subjected to the hardest kind of service, in plants where hard drives are expected, under conditions that would, ordinarily, be considered fatal to long life in belting, Gandy belts are making records for wear that are hard to equal and impossible to beat.

The Gandy belt is the pioneer stitched, cotton duck belt, made water-proof, steam-proof and heat-proof. It is unaffected by atmospheric changes and costs less than any other type of belting made. A sample of the belting, which will prove its high quality, will be mailed for the asking. Write to the Gandy Belting Co., 732 Pratt St., Baltimore, Md., or to the New York office, 88 Reade St.

It is Economy to Employ Expert Engineer

THIS WRITER DECLARES AVERAGE PLANT PRODUCES PRODUCT AT 25 PER CENT TOO HIGH A COST

By George W. Denison

Chief Engineer, Denison Ceramic Engineering Co.

IS it wise to employ an engineer for clay working plants? I am convinced that in nine-tenths of clay working plants, owing to faulty plant arrangement and designing, the cost of producing ware is from 25c to a dollar per ton too great. A plant producing a hundred tons per day, for instance, figuring a minimum of 25c fails to produce profits for the year to the extent of over $7,000.

In plants day after day, year after year, making them produce the goods at a profit, is the essential experience that furnishes the big end of the necessary qualifications for a successful plant designer. However, he must understand mechanics together with the various technical problems that present themselves when designing plants to meet a variety of clays and conditions. He must be able to accurately compute the stresses in designing the structure of the plant in order that neither too much nor too little material be used. He must build to avoid excessive vibration, which means daily power loss. He will fail to get maximum efficiency at minimum cost in his electrical equipment unless he himself thoroughly understands the subject and does not have to depend upon salesmen to inform him. He cannot best select or design a dryer for a given clay without knowing the theory of drying. The same is true in the burning of clays, and in all departments of the plant he must be practical and theoretical.

Under a dry pan, nursing a step-bearing through a severe fever, is the time and place to best appreciate the faulty design and construction of such a bearing, and if it happens that you are lying on your back in a pool of oil and water, it may occur to you that if this bearing was more get-atable it would have received better attention and the waste of oil, grammar and time would have been avoided; but it may be that it is a common occurrence for this particular bearing to get hot, regardless of the best attention, and it will develop that the foundations were improperly designed and constructed and that the constant vibration and hammering always connected with this type of machine, has so churned the machine and settings that a condition exists which makes permanent, proper alignment impossible, which greatly increases the power losses and frequent shut-downs from broken parts and hot bearings result.

Plants are constructed with the intention of paying dividends to the investor. Your plant must be so designed that it will require a minimum of power, labor and fuel per brick produced, and do not fail to note that "per brick," for if your plant lost a couple of hours yesterday on account of some insignificant nail coming out where a bolt should have been, your cost per brick was 20% too high and your neighbor with his well-designed plant made every minute a "motion minute" and added that 20% to the smiling side of the ledger. An accumulation of such smiles certainly will fail to amuse you, but eventually will be the cause of re-publishing that old familiar song entitled, "For Sale Cheap with the Best of Reasons."

The man who operates his own plant through sunshine, snow and rain, accumulates a variety of important coincidences. Water will seek its level. An elevator boot full of water makes a poor pug mill. Bad arrangement and association of machines creates dissatisfaction among laborers. The duties of one man may be twice as hard as those of his fellow laborer. A certain function may be too much for two men and too easy for three. A machine room large enough for a three-ring circus with high dive and trapeze performance is anything but ideal. It cannot be kept comfortable in winter and is only a monument to a foolish expenditure. A man that has performed all the duties around a brick or tile plant is qualified to estimate the amount of work a laborer can do and should be able to proportion a plant and eliminate unnecessary movements, which will vastly help in keeping harmony and promoting among the employees a desire for the success for their employer, which is, in itself, a valuable asset.

Every machinery man says his machine is the best. Some transmission manufacturers recommend ring oiling bearings, some collar oiling, some say link belt, some rope drive, some recommend cold rolled shafting. Others say it must be turned; motors may be belted or geared. They all have their advantages.

To answer your question in a nut shell the engineer who has first had a thorough schooling in actual plant operation, then with technical education added and last but not least, the great schooling he gets from designing plant after plant, improving his skill thereby, certainly should be of service to the owner in assisting him in building his plant for maximum efficiency at minimum cost.

NEW PAXTON BRICK PLANT OPENS.

The citizens of Paxtonville, Pa., are elated over the starting of the Paxton Brick Company's plant at that place. It is a large plant, of modern construction, and the present capacity 60,000 to 75,000 can easily be increased to 100,000 per day.

A steam shovel is used in the shale bank, which is only a short distance from the plant, and the cars are run to and from the plant by trolley; a No. 5 Champion Crusher, Stevenson Dry Pans, and a Freese brick machine have been installed. There is drying capacity for 100,000 per day.

A modern 10 Chamber Younghren gas producer kiln, which insures a minimum cost in burning, is a feature of this plant.

Gem City Boilers Best for Clay Plants

Let Us Tell You Why.

We also manufacture Tanks and Heaters, and make a specialty of general steel plate construction.

Gem City Boiler Company

Write for Catalogue. **Dayton, Ohio**

The Marion Steam Shovels at Work

The following pictures show some Marion steam shovels under operation:

Woodland Clay Co.'s Model 28 at Woodland, Ill.

Another View of the Woodland Plant's Clay Pit.

Special Model No. 100, Built for the Illinois Brick Co., of Chicago.

Fire Clay Found at Martinsburg, Mo.

A bed of fine fire clay of the best blue flint quality has been found at Martinsburg, Mo., at a depth of 195 ft. Just above this clay is a layer of white clay 2 ft. thick and above the white clay, a vein of coal 3 ft. thick. The coal is hard and clean and is said to be suited for high heat kilns.

The Federal Clay Product Co.
Mineral City, Ohio
Fire Brick for Kiln Work Made a Specialty

ROBERT W. HUNT JNO. J. CONE JAS. C. HALLSTED D. W. McNAUGHER
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THE FRINK METHOD
of Burning Clay Materials, Write
THE FRINK PYROMETER COMPANY
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CHARLES A. SEARING, Engineer
1508 Farmers Bank Building, PITTSBURGH, PA.
Announces that he has severed his connection with Harbison-Walker Refractories Co., where he has been in charge of their Engineering Department
General Engineering Work
SPECIAL ATTENTION TO MANUFACTURING PLANTS

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Manufacturers of a Complete Line of Sand-Mould Brick Machinery
Write for our latest catalogue.
We can take care of your wants.
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Cost less to purchase, install and operate than any other type of brickyard pump. They handle gritty water and never need lubrication.
Write today for our "Pulsometer Handbook." It shows many novel installations and contains valuable data on pumping problems.
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PAVING BRICK WORKS
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Vitrified Shale and Fire Clay
Paving Bricks and Blocks
Burned in Yates' Patent Kiln
SAMPLES AND PRICES ON APPLICATION

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ARE MADE OF
GALESBURG
SHALE
The Purington Paving Brick Co.
GALESBURG, ILL.

Calls Modern Machines Perfect in Construction

By H. O. Steele

Of J. C. Steele & Sons

It is a source of much satisfaction to machinery men to note the very great improvements made in the manufacturing end of the clay business in recent years. All will concede that working clay is about the hardest task that machinery can be called upon to go against.

Experience has taught us the proper relation of the parts, so that clay will be formed into the bar with least resistance, consequently the least power and wear on parts.

Much of the trouble of operating has been caused by an inclination of the machinery to choke, or back-feed, due to improper relation of the parts, dies not suitably lubricated for the clay or clay not properly prepared.

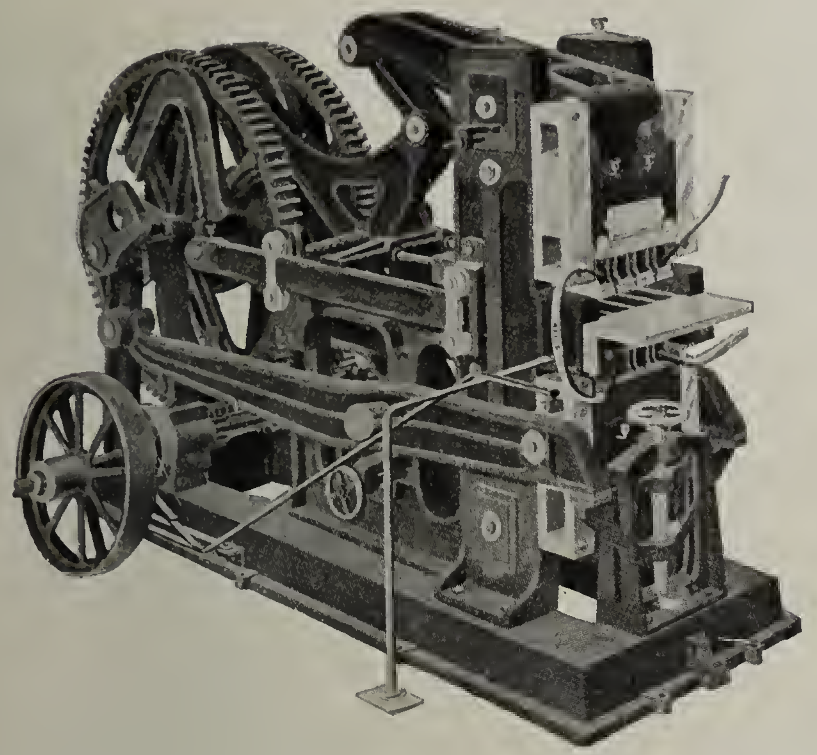
These troubles are fast disappearing; better provision being made for keeping dirt out of bearings and for keeping them properly lubricated.

A modern brick plant, with reasonable attention, confidently can be expected to operate continuously, without the annoying breakdowns, so common a few years ago.

There are still many brick plants in which the machinery does not get reasonable attention, and as a consequence the repair account is much larger than it should be.

Installs Callaway System.

The Ed. H. Callaway Engineering Company, Woolworth Building, New York, has closed a contract with Mr. E. L. Cook of State Farm, Mass., to install the Callaway mechanical trucking system on his brick yard for conveying the pallets from his machine into the alleyways between his drying racks, thus doing away with all wheelers. Mr. Cook is also installing a car system designed by the same company for taking the dried brick from his drying racks into his kilns. When these two systems are installed, Mr. Cook will be able to handle his green brick from the machine into the drying racks and his dried brick from the racks to the kilns with five men instead of the ten or twelve men that would be necessary if he were using trucks and wheelbarrows. His output on this yard is 50,000 soft mud bricks per day. The Ed. H. Callaway Engineering Company is making a specialty of handling green brick, dried brick, and burned brick mechanically and dispensing with truckers and wheelers.



Dry Press Made by Fernholtz Machinery Co., of St. Louis, Mo.

INSURES ABSOLUTE TEMPERATURE CONTROL.

Heraeus Le Chatelier Pyrometers are Recommended by the Highest Authorities.

For measuring temperatures between 0 and 1600 degrees Celsius, equal to 2920 degrees Fahrenheit, Heraeus Le Chatelier Pyrometers, sold in this country by Charles Englehard, of 30 Cortlandt St., New York, are being successfully used in establishments for the manufacturing of common and pressed brick, terra cotta, pottery, porcelain, stoneware, chamotte, cement, glass, iron, steel and other metals, particularly for hardening and annealing, also for molten metals, cartridges, ammunition, chemicals and gas accumulators. They are also used extensively by boiler inspectors and in the testing laboratories of schools and universities.

The Heraeus Patented Electrical Furnaces are also indispensable for research work and for experimental work among ceramists of international reputation.

Charles Englehard is also sole American representative of the Heraeus Patented Fused Quartz Glass articles, in use where glass containers are required that are unaffected by atmospheric changes, the co-efficient of expansion being only one-seventeenth that of platinum. Descriptive literature and prices on application.

MAKES SAND-STONE BRICK MACHINERY.

Michigan Concern Successfully Overcomes Early Difficulties and Renders Sand-Lime Brickmaking Profitable.

So much has been said about the failure of sand-lime brick plants to "make good" that it is refreshing to know that the industry as now conducted, is growing in strength and, every day, making a better product. Just how much of this is due to our own improvements, as made to the original German machinery, is something that only those who are familiar with the manufacture of sand-lime brick can say, but there is no doubt that the earlier difficulties were hard to overcome and that the Jackson & Church Co.'s machinery has helped to make a success of many an enterprise that would have, otherwise, been a doubtful investment. Its office is in Saginaw, Mich.

Sterling Brick Company
OLEAN, N. Y.
Manufacturers
OLEAN BLOCK
Dunn-Wire-Cut-Lug
Made from shale
VITRIFIED
Many are not as good,
A few may be as good,
None Are Better

Vitrified Shale Paving Blocks, Fire Clay Paving Blocks, Dunn Wire-Cut-Lug Blocks.

Paterson Clay Products Co.
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Marion Brick Works
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MARION PAVERS
A Strictly High Class Paving Block
Also: Fancy Face Building Brick,
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**The Unsurpassed
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Fire Brick Facts For Kiln Builders

Do not overlook the quality of Fire Brick used in inner walls, crowns and fire arches of your kilns; this is all important. When fire brick begin to give away the whole kiln is impaired.

No brick construction will stand under strain of gradual contraction account of poor quality fire brick.

Consult us in advance of placing your orders.

Davis Fire Brick Co. Oak Hill, O.

BRICK MAKERS

Many of the largest users in your line, after costly competitive tests and experiments, are now specifying—

Evens & Howard Fire Brick

BECAUSE OF

QUALITY, PRICE AND SERVICE

We will be pleased to furnish complete information and quote prices on request.

EVENS & HOWARD FIRE BRICK COMPANY
SAINT LOUIS

Established 1856

HENRY MAURER & SON

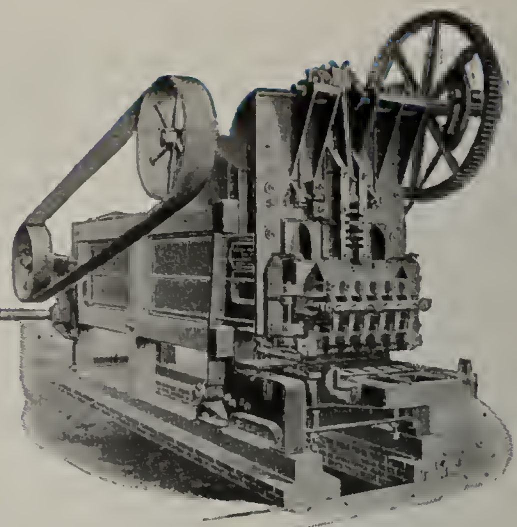
Manufacturers of

High Grade Fire Brick

Our "Henry Maurer" No. 1 quality Fire Brick is recognized throughout the country as a standard article. We make all shapes and sizes for kiln-work and all other requirements. Catalogues on application. We solicit your inquiries.

Office: 420 East 23rd St. New York, N. Y.

Works: Maurer, N. J. (On L. V. R. R. and C. R. R., N. J.)
Philadelphia Office: Pennsylvania Building



The New Haven Soft Mud Brick Machine, Made by the Eastern Machinery Co., of New Haven, Conn.

UTILIZES EVERY B. T. U.

Grateless Furnace Saves Fuel, Decreases Time in Burning and Increases Kiln Capacity.

Constructed without grates, so saving not only the cost of their installation, but eliminating repairs, the McManigal Grateless Furnace for burning brick and other clay products, is meeting with great success on a large number of plants, the products of which are of widely varying natures.

This furnace is so constructed that the coal is coked, and so gives the full benefit of all gases and heat units. As absolutely nothing is lost in the fuel, it reduces fuel bills 15 to 40 per cent as compared to the ordinary process of direct firing and, it is claimed, saves from one to three days in the burning time, which means increased kiln capacity and decreased labor cost.

McManigal Grateless Furnaces are covered by Canadian and United States patents, and the manufacturers are very much inclined to prosecute infringements. Further information will be cheerfully given on application to R. D. McManigal, manager, Logan, Ohio.

DESIGNS MODEL PLANTS FOR CLAYWORKERS.

L. E. Rodgers Points to Some of the Largest and Most Modern in Country as Product of His Institution.

If one had an album of all the truly successful clay plants of the country and were to turn the pages one by one with L. E. Rodgers of the L. E. Rodgers Engineering Company looking over his shoulder, and that one did not know what business Mr. Rodgers is engaged in, it is very likely that the man with the album would gain an idea that Mr. Rodgers is the largest individual owner of clay plants in the world.

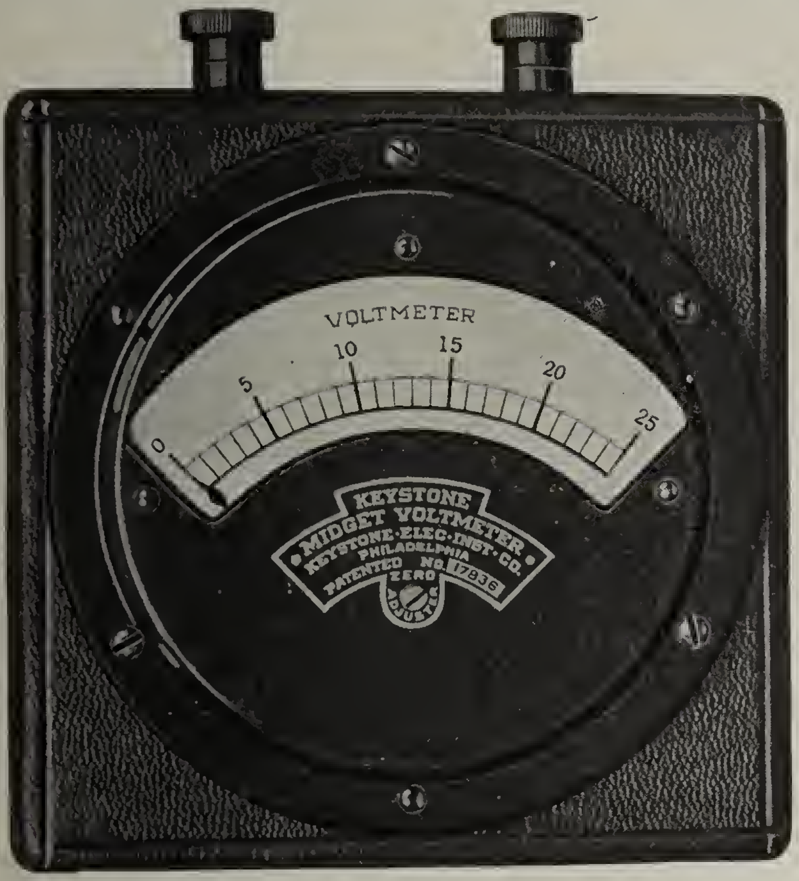
"That's one of my plants," Mr. Rodgers would say as he pointed at a picture. "That's another and the one on the next page is another." And so on throughout the album he would very likely claim ownership of practically all in the book.

Mr. Rodgers, however, is not a clay plant owner. Instead of being the John D. Rockefeller of the industry he does not own a single plant, as far as can be learned. When he says, "That's one of my plants," he means, of course, it is a plant he has designed, built and put into operating condition for a client, for Mr. Rodgers, of course, is an expert engineer to the clayworker and as such has planned and designed as many clay plants of a successful kind as any living man.

Introduces New Voltmeter Midget in Size

THE Keystone Electrical Instrument Co. of Philadelphia, Pa., has been perfecting for the past year a midget ammeter and voltmeter 3" in diameter of the highest grade for use on switchboards, automobile dashboards, and for portable service where a small instrument is particularly desirable.

In bringing out this instrument the Keystone Electrical Instrument Co. has endeavored to reduce the number of parts required in the standard d'Arsonval system to a minimum. It is a well known fact that the d'Arsonval principle is the most accurate for direct current measurements, and in order to reduce the cost of these small instruments, and at the same time produce a high grade accurate instrument much study has been given to this feature.



The accompanying cut shows the front of board Keystone ammeter and the simplicity of construction will be evident at a glance. A tungsten steel magnet of unusually large size is used so that permanency can be secured, and to increase the dead beat operation of the instrument. This magnet has no pole pieces, the poles being accurately ground. This does away with the magnetic joint between the magnet and the pole pieces, and also increased the magnetic strength. The bases are of moulded material to insulate the studs carrying the current through the switchboard or dashboard, and this material is also used so that the magnetic strength may be unaffected.

To obtain the greatest strength from the magnets the covers are also formed of brass instead of iron. All holes in the covers and bases are square so there is no possibility of turning of any of the parts when tightened up. The aluminum coil form seven-thousandths of an inch in thickness on which the fine enameled wire is wound swings in sapphire jewels between the poles of the magnet. The pointer is of aluminum tubing twelve-thousandths of an inch in outside diameter and with a wall one-thousandth of an inch thick, and the whole moving element weighs only slightly over one-tenth of a gram, or the

THE DECKMAN-DUTY BRICK CO.
CLEVELAND, OHIO.

THE HOME OF "MEDAL BLOCK" AND THE BEST BRICK PAVED CITY AND COUNTY IN THE WORLD

"Licensee of Dunn Wire-Cut-Lug Block. The *Best* and most suitable form of *Paving Block* for *Road Way Improvements* in use with the *Cement Grout Filler.*"

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DOVER FIRE BRICK CO.

Incorporated 1870

—— MANUFACTURERS OF ——

Dover and Buckeye Fire Brick

Unexcelled for Kiln Purposes

509 Cuyahoga Bldg. Cleveland, Ohio

AJAX

FIRE BRICK

Two of the many hundred kilns built of these famous brick. Are you using them?

Write for price and catalogue.

Chicago Retort & Fire Brick Co.
195 So. Clark St., CHICAGO

THE RICHARDSON-LOVEJOY
ENGINEERING COMPANY
COLUMBUS, OHIO
CERAMIC ENGINEERS
FACTORY ARCHITECTS
Geological Examination of Properties
Clay Testing
Investigations of Manufacturing Propositions
Plants Designed, Construction Superintended
and Operations Directed
Driers, Furnaces, Kilns
Remodeling Old Plants Given Special Attention
Development of New Lines of Products
Pamphlet, "Ceramic Engineering." Free

Are Your Freight Rates Satisfactory?

Did it ever occur to you that your competitors in many instances have rates that are predicated upon a more equitable basis due entirely to the aggressiveness of expert traffic men?

We have in our employ men who thoroughly understand these vexatious traffic problems and are prepared to assist you in every possible manner.

Results Produced or No Charge

GENERAL TRAFFIC ASSOCIATION, Inc.
715 14th St., N. W., Washington, D. C.

"Buckeye Rails Are the Standard for Quality"
THE BUCKEYE ROLLING MILL COMPANY
Exclusively Manufacturers of First Quality Light Steel Rails and Accessories
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Recommended by the highest authorities

For measuring temperature between 0 and 1600 deg. Celsius, equal to 2920 deg. Fahrenheit. Successfully used in establishments for the manufacture of Brick, Pressed Brick, Terra Cotta, Pottery, Porcelain, Stoneware, Chamotte, Cement, Glass, Iron and Steel and other metals, particularly for Hardening and Annealing, also for Molten Metals, Cartridges and Ammunition, Chemicals, Gas Accumulators, and by Boiler Inspectors, Schools and Colleges.

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of every description. This Heraeus Patented Fused Quartz Glass is not affected by any changes of temperature whatsoever, and the co-efficient of expansion is only 1-17 that of platinum. It is of the utmost importance for all purposes where the above qualities are essential. Write for information. Pamphlets and References on Application.

CHARLES ENGELHARD, Hudson Terminal Bldgs.
30 Cortlandt St., NEW YORK CITY

weight of one common pin. With a moving element so exceedingly light as this the instrument is absolutely dead beat in operation, and the pointer does not oscillate, although the instrument is subject to severe vibration. This exceedingly light moving element also has the advantage that there is practically no weight whatsoever on the pivots and bearings, assuring long life for the instrument. The scale is white enameled on brass except where the black scales with white letters are preferred. Each instrument is equipped with a zero adjusting device by means of which the pointer can be readjusted to zero at any time from the outside of the case.

DOES AWAY WITH PICK AND SPADE.

Thew Automatic Shovel Requires One Man and Does Work of Twenty.

Cost reduction, the problem of the modern clayworker, should begin at the beginning of his daily expense and that is, naturally, at the point where he gathers his clay. The use of pick-axe and spade has not improved since "Adam dolve and Eve span"—excepting that common labor is more scarce, more expensive and more inefficient than it was—even ten years ago. So, where outcrop must be removed, or clay harvested, a Thew steam shovel begins to cut costs the day of its installation. The interest on the amount that a Thew shovel costs the clayworker, plus the cost of operation, is so much less than the daily payroll of a pick-and-shovel gang, that it pays for itself in a very short time, and when it is paid for, out of its own earnings, as it were, interest need no longer figure. But the saving in labor cost will go right on, year after year, and show on the "profit" side of the ledger.

If your yard has a capacity of 30,000 brick or more, you need a Thew shovel. If the capacity is not greater than 125,000 brick per day, you will not need more than one man to run the shovel and gather enough clay to keep the plant up to its full quota. It operates in a complete circle, enabling material to be dumped at side or rear, at will. The dipper is hung from a horizontally moving carriage and can be adjusted to any desired level. Wire cables are used, instead of chains, and the mechanism is first-class in every detail.

Thew steam shovels are made in five sizes, and are mounted on car wheels or on traction wheels, as your limitations may dictate. They are manufactured at Lorain, Ohio, by the Thew Automatic Shovel Company.

Indiana Plant Has Good Business.

No complaints are heard from Indiana this year, as to the amount of business or the prices the men who make hollow brick are receiving. At the plant of the North Manchester (Ind.) Tile & Brick Company, operated by W. D. Green, the whole force, including, we are told, Green himself, his wife and baby, are all on the payroll and making good. The plant has a variety of products; drain tile are made in sizes from 4 to 24 inches, hollow building block, with one side smooth for the outer surface of the wall and the inner side grooved for plastering; fireproof material in new forms and some good old fashioned common brick. The plant is not a large one, but it is being pushed to capacity. An order had just been taken for three thousand 16-inch tile for use in North Manchester. Three cars of tile per week were shipped during June. The bank of clay at this plant is one of its big assets. It is a smooth working blue clay, ideal for all manner of tile and brick, and there is an unlimited quantity to be had. Since taking charge of the mill, Mr. Green has made a number of changes, and is planning many more.

What Makes Coal Burn Economically In a Clay Plant

By E. H. Irwin
District Sales Manager, O'Gara Coal Co.

From left to right, E. H. Irwin, in charge of sales of the four mines in the Cambridge field of Ohio, two in the Linton and one in the Clinton district of Indiana. J. R. MacFarland, in charge of sales for the fifteen mines in the Harrisburg field of Illinois. Thomas S. Jones, General Sales Manager. J. H. Moran, in charge of sales of two mines in the Springfield district of Illinois. J. P. O'Connor, Traffic Manager.

While the geographical situation of the plant in many cases has a good deal to do with determining the most desirable fuel for that plant from the standpoint of expense as related to efficiency, in a general way, the ideal coal for burning clay products should have properties combined about as follows:

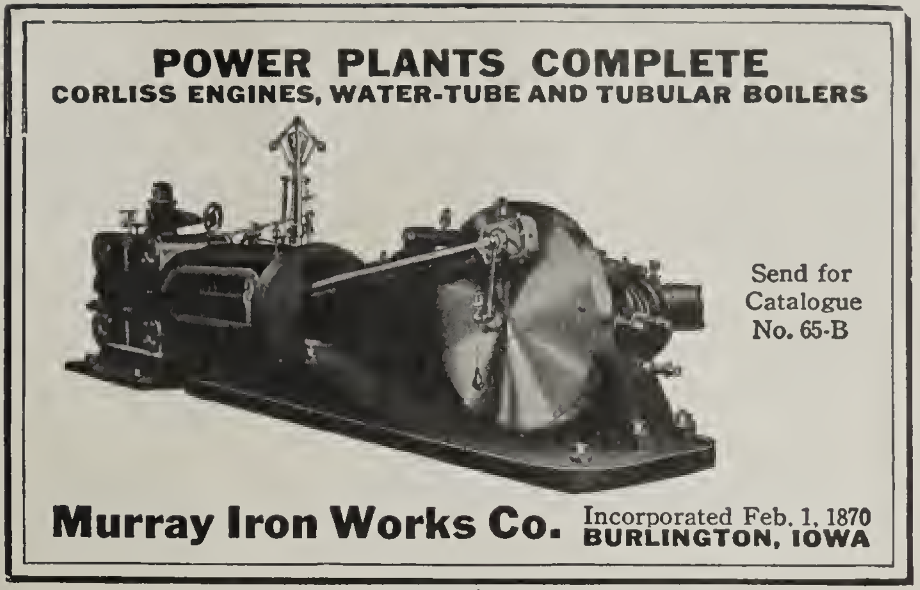
High percentage of volatile combustible (gassy) matter. The coal should yield a long flame while being consumed, carrying the heat to the different parts of the kiln. The range should be between 35% and 38% volatile matter.

High percentage of fixed carbon. The coal should give forth intense but lasting heat,—it should not be consumed too quickly. The more carbon in the coal the more heat you get out. The percentage usually found in coals giving the best results is between 48% and 53% fixed carbon.

Low percentage of ash. Ash at its best is but waste material, adding to cost for freight charges for handling and firing, and for disposing of the refuse. At its worst it means a chemical combination that fuses at comparatively low temperature, causing clinkers to form and run on the grate bars, hindering draft and proper combustion and causing extra expense for renewal.

Low percentage of moisture. It consumes heat to evaporate the moisture in coal. From this heat you get no benefit. Hence the more moisture present the less efficiency you get from your coal. Coal containing the other necessary requisites usually run from about 4% to as high as 10% in moisture.

Low percentage of sulphur. The presence of an excess of sulphur in coal is objectionable for almost every use to which coal is put. In many cases it spoils the color of the finished product and is one of the principal factors which causes ash to clinker. When the coal contains over 1.5%



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Our Dryers Get RESULTS.

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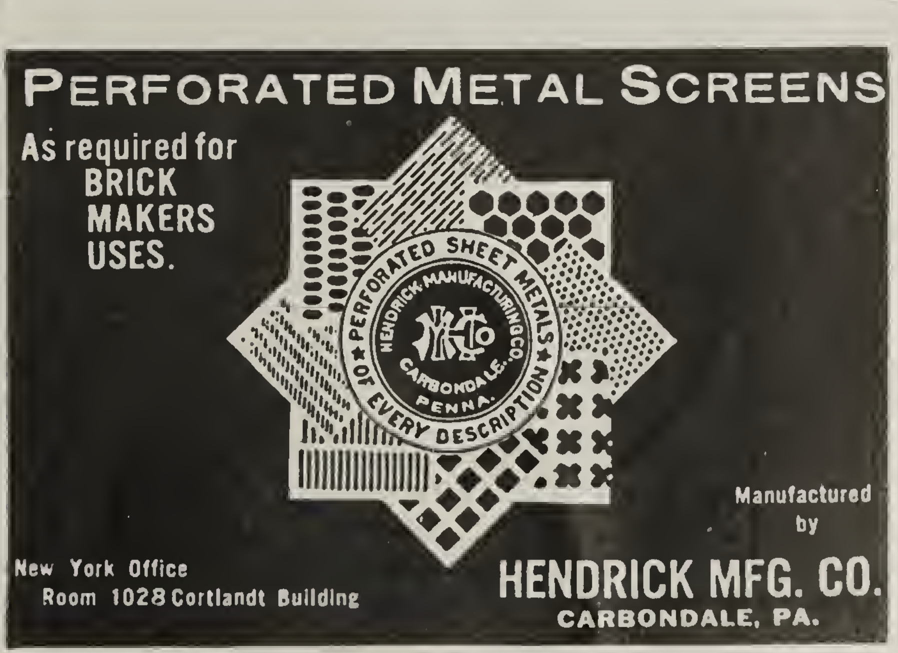

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Operating an Underground Pump with a GANDY BELT

Mr. A. E. Bendelari, General Manager The Underwriters' Land Co., Webb City, Mo., writes:—"We have been using your belt for some time in our mill work and recently bought several which we are using on motor-driven, centrifugal pump work underground. We are pleased to say that when we buy a Gandy Belt we know we are getting one that will give us the best of service."

The GANDY Belt

brings forth letters like the foregoing almost daily. The Gandy is just as successful in the Brick field. It is constructed of an extra heavy cotton duck, is saturated in a compound of oils that make it water, heat and steam proof, and while its first cost is only about one-third that of leather belting, and very much less than that of rubber belting, it does the work equally as well.

Samples and full information gladly supplied to all interested

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Daily service is operated between Detroit and Cleveland, Detroit and Buffalo; four trips weekly between Toledo, Detroit, Mackinac Island and way ports; daily service between Toledo, Cleveland and Put-in-Bay.

A Cleveland to Mackinac special steamer will be operated two trips weekly from June 15th to September 10th, stopping only at Detroit every trip and Goderich, Ont., every Monday up-bound, Saturday down-bound.—Special Day Trips Between Detroit and Cleveland, During July and August.—Railroad Tickets Available on Steamers.

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D&C LAKE LINES

sulphur it approaches the danger point of dis-satisfaction.

Probably the districts in which these characteristics are most prominently found are: the Cambridge field of Ohio, the Linton district of Indiana and the Harrisburg field in Southern Illinois as shown by the following analyses from our own mines:

O'Gara Coal Co.'s Imperial Cambridge Coal.

Moisture	4.53 per cent.
Volatile Matter	37.27 per cent.
Fixed Carbon	52.40 per cent.
Ash	5.80 per cent.
	100.00 per cent.
Sulphur, separately	0.82 per cent.

O'Gara's Vivian Mines, Linton District, Indiana.

Moisture	8.05 per cent.
Volatile Matter	32.12 per cent.
Fixed Carbon	50.90 per cent.
Ash	8.93 per cent.
	100.00 per cent.
Sulphur, separately	0.97 per cent.

O'Gara Harrisburg, Illinois, Mines.

Moisture	4.20 per cent.
Volatile Matter	37.12 per cent.
Fixed Carbon	53.18 per cent.
Ash	5.50 per cent.
	100.00 per cent.
Sulphur, separately	1.55 per cent.

All these coals are quite extensively used throughout the Central and Middle West states, in burning brick and tile and all manner of clay products, and the consumption of them is increasing rapidly as the progressive manufacturers become better acquainted with them.

PYROMETERS PAVE WAY TO PROFITS.

Electric Service Connecting Recording Guages Shows Heat Fluctuations at a Glance.

The use of pyrometers a few years ago was entirely unknown in the clay product industry. Such rapid strides have been made, however, in all the different departments of clayworking that today it is the rule rather than the exception to see a kiln equipped with a pyrometer, and to the Brown Instrument Company of Philadelphia much of the credit for this evidence of the march of progress is to be given.

Brown electric pyrometers adjusted to a kiln mean that your ware will always be burned a uniform color with a greater percentage of firsts.

That you will gain a considerable saving in fuel.

That you will get more efficient operation of your kilns.

TAKING IN A WIDER FIELD.

Charles A. Searing Severs Connection With One Manufacturer to Act for the Clay Craft at Large.

Having been in charge of the engineering department of the Harbison-Walker Refractories Co. Charles A. Searing has had an opportunity of seeing, at first hand, the development of one of the most important industries in America. The fact that he is now seeking a wider field for his talent is of importance to the clayworking world, since, while equipped to cope with general engineering problems, Mr. Searing is making a specialty of clayworking plants and will be found truly "a friend in need" when the problem is too great to be solved by "home talent." Mr. Searing's office is in the Farmers' Bank Building, Pittsburgh, Pa.

Read the Special Feature on Burned Clay in Factory Construction in Aug. 1 "Brick and Clay Record."

Standard Specifications for Tubular Boilers

The following specifications for the standardization of horizontal return tubular boilers have been adopted by a number of manufacturers:

Boilers to conform to these specifications shall be made and equipped as there indicated and as described herein. All boilers shall be of such strength that the factor of safety shall be not less than five.

Materials—The shell, heads and covering strips of the standard boiler shall be of flange steel as described in the standard specifications of the Association of American Steel Manufacturers. All such plates shall be marked 60,000 pounds tensile strength and in building the boiler the plates shall be so placed that these stamps are plainly visible on the outside. These plates shall have the full specified thickness at the edges and shall meet the tensile, quenching and bend tests described.

The tubes shall be standard quality lap-welded mild steel of standard manufacture. The thickness of the metal shall be 12 B. W. G. for 3-inch tubes, 11 B. W. G for 3 1-2-inch tubes and 10 B. W. G. for 4-inch tubes.

The diagonal braces shall be weldless of the same quality as the flange steel previously described and pressed from the solid plate, or else forged from steel bars. The number of braces to be used shall be computed on an allowance of not more than 7,500 pounds of load per square inch of section of brace neglecting in this, the inherent strength of the heads and the slight angularity of the braces.

Suitable through rods and braces shall be installed below the tubes when necessary to sustain the pressure. These shall be of steel and shall be computed with the same allowance as diagonal braces.

Braces as above described shall be carefully placed so that the pressure on the flat surfaces, both above and below the tubes shall be as nearly equally distributed as possible.

For any boiler head the area to be supported by braces shall be the surface included within lines drawn two inches from the outside of the tubes and three inches from the inside of the shell.

Design—The longitudinal seam of the shell shall be of the butt joint type having inside and outside covering strips and either double, triple or quadruple riveted.

The circumferential seams shall be of the lap type of joint and single riveted.

In all joints the size, number and spacing of the rivets shall be such as to provide the strength necessary to maintain the factor of safety of five.

The tubes shall be placed in vertical and horizontal rows with ample space between the adacent tubes and also between tubes and shell for the circulation of water and also with a large steam space above the water line.

Boilers forty-four inches or less in diameter shall have a manhole above the tubes and a handhole below the tubes. These may both be in the front head or the handhole may be in the front head and the manhole in the back head. Boilers forty-eight inches in diameter shall have two manholes, both in the heads, one above the tubes and one below the tubes. They may both be in the front head or one manhole may be in the front head below the tubes and the other in the back head above the tubes. Boilers larger than forty-eight inches shall have two manholes, one of which shall be in the front end below the tubes, the other shall be above the tubes in either head or preferably may be placed in the shell. The opening in the manhole shall not be less than 10x15 inches. Each manhole shall be equipped with a heavy plate, bale, bolt, nut and gasket.

Manholes placed in the shell shall be properly reinforced with a suitable steel saddle.

All openings 2 inches in diameter or larger shall have suitable steel reinforcing flanges riveted on. Cast iron flanges or nozzles shall not be used.

Boilers of 125 or 150 pounds working pressure shall have the feed opening in the front head over the tubes and same shall be provided with a brass bushing and an

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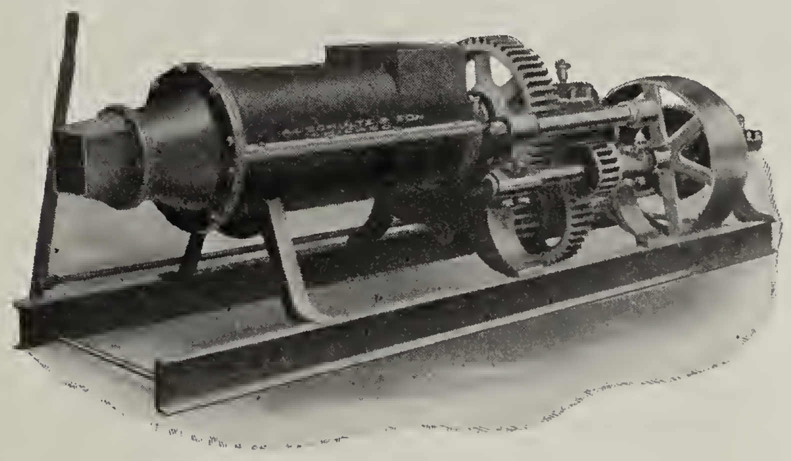
SCHULTZ EQUIPMENT
For Brick, Tile and Terra Cotta Plants

We make a specialty of designing and furnishing complete machinery equipment for all kinds of clay-working plants, including expert engineering service in supervising erection and installation.



Double Pug Mill equipment, especially designed for the perfect preparation of material in the manufacture of terra cotta.

SCHULTZ HEAVY DUTY FRICTION CLUTCH
suitable for all purposes. If you are having clutch trouble, write to us and we will show you the way out of your difficulties.

Complete brick plants furnished promptly, including auger machines, pug mills, clay cars and granulator shafts.

Cutting and cut steel gears always in stock for brick machines, also granulator knives.

Remember, we are brick works engineers and will be glad to advise you regarding any improvements or repairs which you contemplate.

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We also make a complete line of Power Transmission Appliances, Engines and Boilers, THE GREATEST ECONOMY

is effected through the use of up-to-date methods and equipment.

The Martinsburg Brick Wagon

is the last word in up-to-date delivery equipment. Not an experiment but proven by the most thorough tests under hardest conditions.

Slides out the load in one minute and doesn't chip a brick. No complicated mechanism. Capacity 1400 to 2000.

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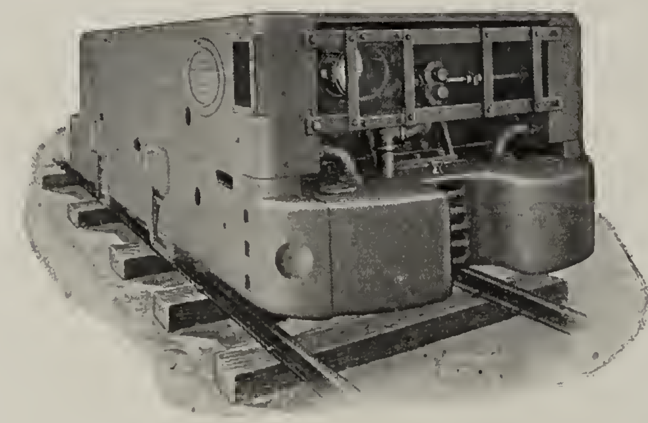

Over 300 in Use—

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2½ to 16 Tons Weight.

Geo. D. Whitcomb Co.

Rochelle, Illinois

internal feed pipe extending from the front end of the boiler to within about three feet of the rear head, thence across to the side of the shell terminating in an elbow for discharge below the top row of tubes.

Boilers for 100 pounds working pressure shall be arranged to feed through the blow-off connection and the internal feed pipe be omitted.

Each boiler shall be provided with four steel lugs or brackets, two on each side for supporting the boiler, except that boilers 78 inches in diameter or boilers 20 feet long shall be provided with eight such lugs, four on each side of the boiler and all of them arranged in pairs.

Workmanship—All rivet holes, and all tube holes shall be either drilled from the solid or punched small and reamed to size. After drilling or reaming the plates shall be taken apart and all burs removed and the tube holes chamfered with a rose reamer.

The tubes shall be carefully placed, expanded tight in the heads with a roller expander and the ends carefully beaded over against the head at both ends.

Water Column—The water column shall be provided with three gauge cocks and shall be so placed that the lowest gauge cock shall be two inches above the tops of the uppermost row of tubes. The middle gauge cocks shall be three inches and the uppermost gauge cock six inches above the lowest gauge cock measured vertically.

When specially requested the boiler manufacturer will furnish copies of the record of tests of the plates as made by the steel manufacturers. These reports shall be deemed sufficient indication of the quality of steel used.

Equipment—A complete standard boiler equipment includes:

- The bare boiler with lugs.
- Cast iron front with anchors.
- Grate bars with bearers.
- Rear arch bars.
- Rear ash pit door and frame.
- Safety valve with nipple to connect it to boiler.
- Steam gauge with siphon.
- Water column with gauge glass, three gauge cocks and pipe connections to boiler.
- Blow off valve.
- Check valve.
- Stop valve for water feed line.
- Smoke stack and guys.
  - (Stacks less than 60 feet long shall have four guy eyes, and guys six times as long as the guy eyes, two sets of three, and guys ten times stacks. Stacks 60 feet long or longer have six as long as the stack.)

A stack plate or nozzle shall be included with each full front boiler.

The following manufacturers have adopted the above specifications:

Bass Foundry & Machine Co., Fort Wayne, Ind.; John Brennan & Co., Detroit, Mich.; Broderick Co., Muncie, Ind.; Wm. Bros. Boiler & Manufacturing Co., Minneapolis, Minn.; The Brownell Co., Dayton, Ohio; The Casey-Hedges Co., Chattanooga, Tenn.; Chandler & Taylor Co., Indianapolis, Ind.; R. D. Cole Manufacturing Co., Newnan, Ga.; Erie City Iron Works, Erie, Pa.; S. Freeman & Sons Manufacturing Co., Racine, Wis.; Frost Manufacturing Co., Galesburg, Ill.; Gem City Boiler Co., Dayton, Ohio; Houston, Stanwood & Gamble Co., Cincinnati, Ohio; E. Keeler Co., Williamsport, Pa.; Kewanee Boiler Co., Kewanee, Ill.; Lombard Iron Works & Supply Co., Augusta, Ga.; Lookout Boiler & Manufacturing Co., Chattanooga, Tenn.; McIlvain & Spiegel Boiler & Tank Co., Cincinnati, Ohio; Milwaukee Boiler Co., Milwaukee, Wis.; John H. Murphy Iron Works, New Orleans, La.; John O'Brien Boiler Works Co., St. Louis, Mo.; Phoenix Iron Works Co., Meadville, Pa.; John Rohan & Son Boiler Works Co., St. Louis, Mo.; J. S. Schofield's Sons Co., Macon, Ga.; Dan Shea Boiler Works, Memphis, Tenn.; Southern Engine & Boiler Works, Jackson, Tenn.; Topeka Steam Boiler Works, Topeka, Kas.; Tudor Boiler Manufacturing Co., Cincinnati, Ohio; Union Iron Works, Erie, Pa.; Henry Vogt Machine Co., Louisville, Ky.; Walsh & Weidner Boiler Co., Chattanooga, Tenn.; C. J. Walton & Son, Louisville, Ky.; Joseph F. Wangler Boiler & Sheet Iron Works, St. Louis, Mo.; Gem City Boiler Co., Dayton, Ohio.

Something About Gerlock and His Line

In the fall of 1889, H. W. Gerlock purchased a small machine shop in Huntingdon, Penn., and started on a small scale to furnish brick plants their requirements in iron and steel, such as were in use at that time. With the enlargement of the brick business he was compelled to enlarge the plant in order to take care of increasing business and in 1902 built a new plant, which is not the largest, but the best equipped plant of its kind in Central Pennsylvania. At present the concern is having plans prepared for a new foundry building, which when erected will give a considerable additional capacity.

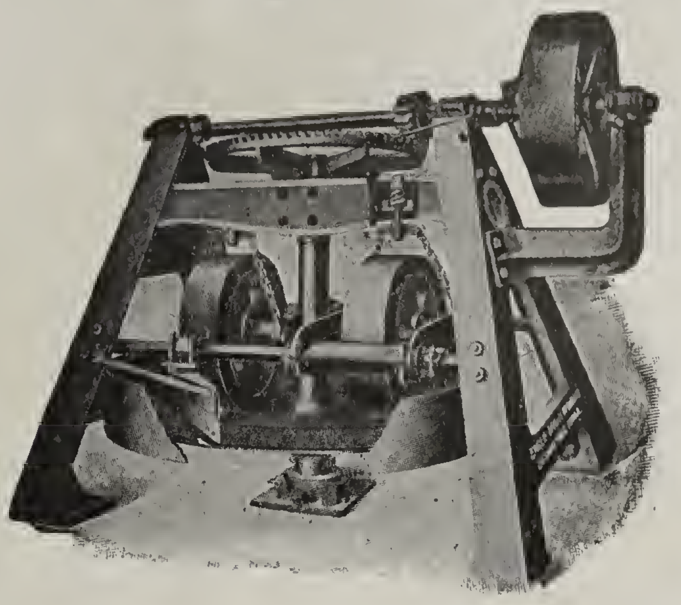
The watchword of the Gerlock factory is quality. Every employe has that drilled into him when he first enters the doors, consequently every employe feels that he is only doing his duty when he is turning out the best of workmanship.

The Gerlock line consists principally of steel dryer cars, kiln bands, kiln buckstays and rods, brick moulds and power lime mixers but Gerlock is in a position to build anything that is made of iron or steel. The sales department is always glad to be consulted on any requirement and willingly furnishes plans and quotations of whatever a customer may desire in the way of equipment.

The mechanical end of the business is looked after personally by Mr. Gerlock, who is always on the job and being perfectly familiar with every requirement of brickmakers, he sees that they get exactly what they want and that specifications are always followed.

Among the plants who are now using the Gerlock line are: General Refractories Co., Claysburg, Pa.; General Refractories Co., Sandy Ridge, Pa.; Mount Union Silica Brick Co., Mount Union, Pa.; Mount Union Refractories Co., Mount Union, Pa.; Harbison-Walker Refractories Co., Pittsburg, Pa.; The Kier Fire Brick Co., Pittsburg, Pa.; Federal Refractories Co., Alexandria, Pa.; American Refractories Co., Joliet, Ill.; The Niles Fire Brick Co., Niles, Ohio; The Diamond Fire Brick Co., Canon City, Colo.; The Standard Fire Brick Co., Pueblo, Colo.; McFeely Brick Co., Latrobe, Pa.; National Refractories Co., Apolla, Pa.; Elk Fire Brick Co., St. Marys, Pa.; S. G. Brinkman Co., Perth Amboy, N. J.

The "Eagle" Dry Pan



With independent and suspended mullers,
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Chase Improved Flexible Bearing Folding Deck Dryer Car

See this car before placing your order.
We also manufacture a full line of Side Dump, Bottom Dump and General Purpose Cars, Transfer Cars, Turntables, Switches, etc.

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Have increased the production of many brick and clay plants 10 per cent or more. our engineers know just the motor characteristics required to drive each type of machine in brick plants at its best producing speed. Our knowledge gained in equipping numerous plants is yours, and costs you nothing. Write to our nearest office for full information.

Westinghouse Electric & Manufacturing Co.
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CLAY HAULAGE

Reduce costs of transportation by using a

Davenport Industrial Locomotive

Small Size—Reasonable Cost—Especially built for use of clay-products manufacturers', for hauling clay or shale from pits or mines to plant.

Cheaper Than Horse Transportation

and will reduce costs of delivering your material to your plant, thus increasing profits.

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PLANT EXPERTS AND MACHINE MAKERS.

A. L. Schultz & Son Advise Unit Installation from Preliminary Plan to Finished Plant.

Manufacturing complete equipments for clayworking plants, A. L. Schultz & Son, of 1675 Elston avenue, Chicago, Ill., make a specialty of designing and furnishing complete, the entire machinery equipment; their plan has the advantage of giving a unit system, whereby parts are interchangeable and, being specially designed to work into and with each other, give the maximum in result with the minimum of cost.

They furnish expert engineering service in the erection and installation of their machinery and are ready to advise, not only on new plants, but on repairs and alterations of old ones. They are makers of the Schultz Heavy Friction Clutch, which, being suitable for all purposes, points a way out of clutch difficulties.

A card to this concern will bring a catalogue to the clayworker who is contemplating repairs or increases to his plant, or will give the man who is thinking of a new installation, information that will prove invaluable.

INCREASES DRYER CAPACITY.

Green Fuel Economizer Increases Output and Earnings, Reducing Items of Time, Labor and Expense.

A book on drying brick and tile has been published by the Green Fuel Economizer Co., of Matteawan, N. Y., that shows how the time of drying may be shortened by artificial means, while insuring a better product. Thus the selling value of the ware is increased, and the cost of labor reduced, to say nothing of the increased capacity given the plant, and earnings amplified.

This book explains the science of drying, a matter that is hit-and-miss with many clayworkers, and in a very simple manner, it explains the application of waste heat by means of Green's fans and exhausters. It goes into the matter of the various kinds of clay and the different wares that are being produced, and is a most valuable work for any one operating or about to operate, a clayworking plant. It is furnished free to any one who will take the trouble to write for it.

The Green Fuel Economizer Co. maintains an engineering department and invites clayworkers to submit sketches of their layout, with particulars about the nature and quantity of the output, and agrees to give suggestions, in return, that cannot fail to be profitable. In addition to fuel economizers, fans, blowers and exhausters, it manufactures steam and air heater coils, and waste heat air heaters, heating, ventilating and drying apparatus, draft dampers and engines—a full line of drying equipment for every purpose.

COMBINE THEORY AND PRACTICE.

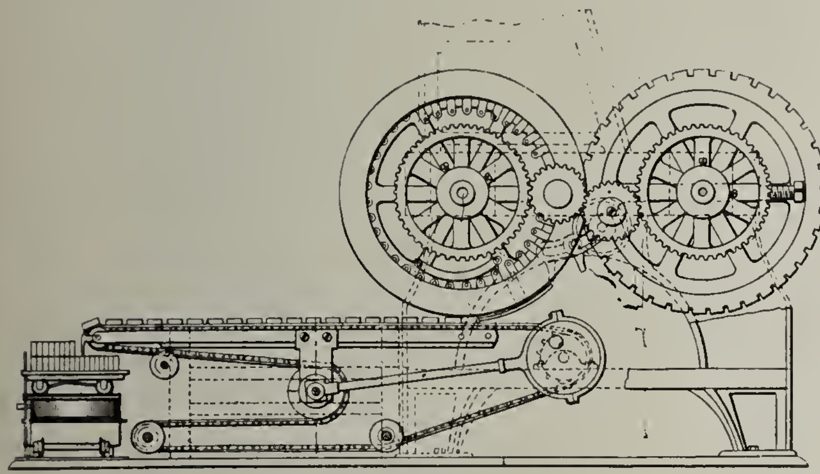
Engineers Test Clay and Finished Product, Design Plants and Insure Economical Installations.

Maintaining offices in all of the larger cities of the United States and Canada, as well as in London, Eng., and in Mexico City, Mex., Robert W. Hunt & Co., engineers, are able to cope with plant difficulties at practically every point in the civilized world, where brick is made by machinery. Not that they limit their activities to clayworking plants alone, but that, in this instance, it would seem that clay plants need the services of expert designers so badly, and it looks as though their future work would be largely along the lines of claycraft.

Machine Has Automatic Delivery of Brick

Not since the introduction of the stiff mud and the dry press brick processes has there been a more decided offering in improved machinery than that of John Uhlhorn, of St. Paul, Minn., who announces a new machine that possesses several radical departures from the regular types.

Mr. Uhlhorn has called his machine "The Revolution," and if half what he claims for the press is true then the name is no misnomer. "The Revolution" is designed to solve the question of economy, for it is automatic in its nature, has an hourly capacity of 10,000 and makes a perfect square-edge or round corner brick.



One of the most important features about the new machine is its automatic delivery. No human hand touches the brick from the time the raw clay is fed automatically into the hopper until the product is through the dryer and ready for the kiln.

Only two men are necessary to operate the "Revolution," one for the machine and one for the delivery device, and any ordinary help around the plant can be used, as the machine requires little or no attention and works automatically.

The "Revolution" is designed to make either clay brick from clay or shale by the stiff mud process, sand lime brick and paving block. In making clay brick every one is a face brick, as the pressure is uniform, the edges without abrasions and so perfect is every brick that no repressing is necessary. The machine, for this reason, makes No. 1 paving block and no extra repressing or handling is necessary.

The "Revolution" occupies a floor space, which includes the delivery mechanism and the car to be loaded, 10x20 feet, and stands thirteen feet from floor to top of feed hopper. The approximate weight is fifteen tons.

The mold wheel is seven feet in diameter, with 12-inch face, steam heated throughout from the shaft, and carries 42 molds on an 8-inch shaft, set in roller bearings, with 42 corresponding dies to match the molds exactly, and can be regulated for more or less pressure with the quadrant gear and impression screws.

The Die Wheel is also seven feet in diameter, and steam heated through an 8-inch shaft, which is set in roller bearings, with 42 corresponding dies to match the molds exactly.

The "Revolution" is run at a speed of four to four and one-half revolutions per minute by means of a compound gear, running perfectly smooth and noiseless without jar or grinding, delivering 10,000 or more brick on a car every hour when running.

The Rust Clay Feeder

You have divorced yourself from hand methods in making brick—why not obtain a separation from hand methods in handling your clay in the pug mill?

Saves $500 a Year in Labor Bills

The Rust Clay Feeder does away with hand labor and one machine will cut your labor bill just $500 every year it is employed.

It increases your capacity—it improves quality and in every way does better work and more work than human hands can do.

Shall we send you absolute proof of these statements? We have them.

Marion Machine, Foundry & Supply Co.
Box 395 - - - - - MARION, IND.

WESTON LOW-DUMP CARS

Save Money in Clay Haulage

Load a Weston Automatic Dump Car and the hoist engine does the rest. It dumps its load automatically through the track by breaking in the center.

The Weston Car is the lowest car per capacity manufactured.

The Weston is the cheapest car on the market for loading.

The Weston is the best car for loading, unloading and handling.

Correspondence invited. Prices and specifications submitted on application.

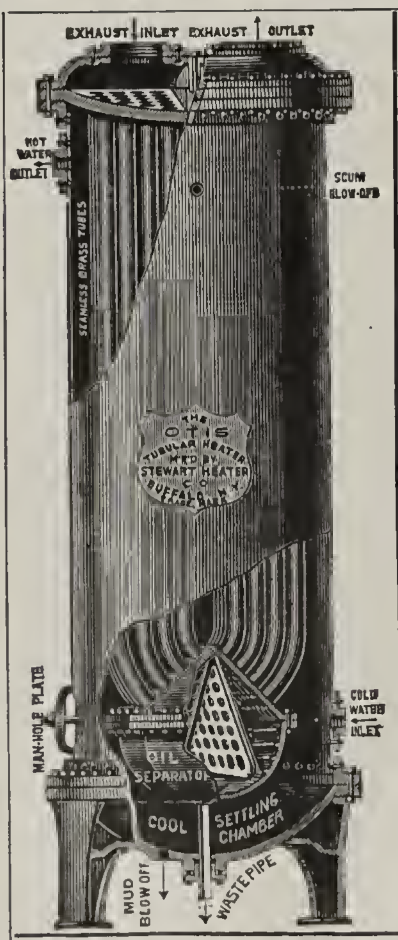
C. J. WESTON
409 First Avenue North, Ft. Dodge, Iowa

SECOND REASON WHY
"NESTOR"
IS UNEXCELLED FOR
BRICK PLANT WORK

ALWAYS PLIABLE, FLEXIBLE,
NEVER BECOMES HARD
LIKE A BOARD

DO YOUR BELTS CONTAIN
THIS FEATURE?

The American Fabric Belting Co.
Cleveland, Ohio



THE OTIS

Tubular Feed Water Heater, Oil Separator and Purifier

is not an experiment but a tried and trusted appliance that the makers are not afraid to

GUARANTEE

To heat the feed water to the *boiling point* (210 to 212 degrees) with the exhaust steam without causing any back pressure, *also to extract the oil from the exhaust*, so that the exhaust steam after being passed through the heater can be used for other heating purposes, and the water of condensation for the heating system be returned to the boiler without the *additonal expense* of an *eliminator*.

We are so sure of the OTIS that we agree to pay all cost of a trial—freight, cartage, piping, etc.—if it fails to do all we claim for it.

Catalogue and Prices at Your Service

The Stewart Heater Company,
33 EAST DELEVAN AVENUE - BUFFALO, N. Y.

The "Revolution" is the only machine on the market which has an automatic delivery. It delivers the brick on the car as desired, without handling. The brick is pushed out of the molds flatwise by means of a plunger, and delivered on a chain belt and carried out to the end. Upon its return the carrier gently turns the brick on edge, and sets them on a car without any abrasion of corners or injury to the brick. The belt is in continuous movement, constantly receiving the brick from the mold wheel and delivering them on the car upon its return. When a car is filled another is put in its place without stopping the machine.

The plungers are operated automatically by means of an upright shaft on a cam and rollers, and always work with precision, with sufficient power to force the brick from the molds at once.

The feed hopper rests immediately over the mold wheel while material is forced into the molds by means of a heilig blade, at the same time the mold is struck off smooth so that no surplus material passes outside of the molds.

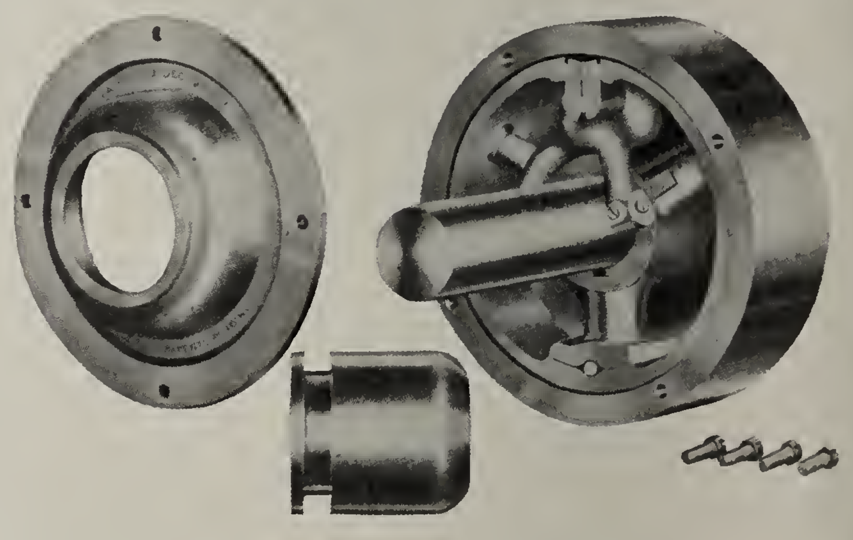
The material to be converted into brick is shoveled into the sluice boxes and forced to the hopper by means of a screw or endless belt, and is fed the exact amount required to keep the molds filled.

Every machine sent out has an automatic counter whereby a record is made of the number of brick manufactured each day. It will indicate up to 1,000,000, when it can be turned back and start with 0.

Mr. Uhlhorn has so much confidence in the machine, he offers to install one or more in any responsible plant without a cent's investment, accepting royalty on the product made.

THE CLEVELAND FRICTION CLUTCH.

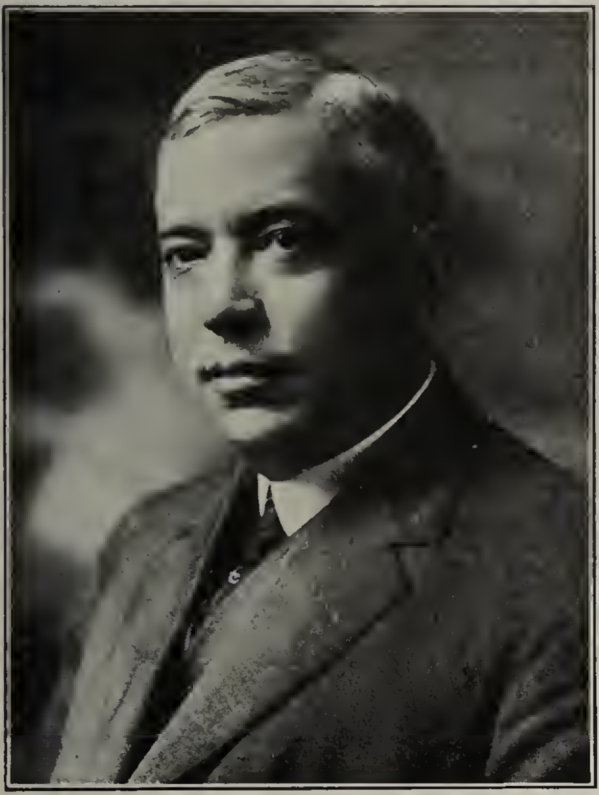
The Cleveland Friction Clutch is adapted to both line and counter shafting and all forms of friction power transmission. It is of the detachable type, making it possible to change the speed and power with little trouble. It is of the expanded ring type, self-oiling and very simple in construction and adjustment.



PUMPS OUT CLAY PITS.

In no other industry does the problem of water pumping offer greater difficulties than the clay product industry. Gritty water and heavy service make it necessary to employ only the most efficient means. The Pulsometer Steam Pump Co., of New York and Chicago solve the problem with its "Pulsometers." The device is not only cheaper to buy and install but more economical to operate and handles gritty water without lubrication better than any other pump.

This Is the Man That Put Conneaut on the Map



Few there are in the clay product industry who have not heard of Frank B. Dunn, the man who invented the cutter that makes the Dunn Wire-Cut-Lug Paving Brick and put Conneaut, Ohio, on the map, as he has been one of the most aggressive advertisers in "Brick and Clay Record," and his general activities in all paving matters has kept his name prominently before clayworkers. But not many know how he looks because they have never had the opportunity to see him, nor has there ever been a picture of him printed in either of the clay journals.

"Brick and Clay Record" has finally broken down the barrier of modesty that has kept his picture out of print all these years, and, prevailing upon Mr. Dunn to "sit" for a special photograph, is enabled in this issue to print the first authentic illustration of the man that made Conneaut famous.

BELTS THAT STAND THE TEST.

A belt that will give the maximum service for heavy transmission, elevating and conveying and, at the same time causes no trouble from bucket bolts pulling out, plies separating or edge abrasion would be looked upon by clayworkers as an ideal proposition. The Imperial Belting Company of Chicago claim all these features for the "Rexall" double-stitched belting and promise to send a sample and a book, "The Reasons Why," to prove their claims.

GEARS FOR CLAY-WORKING MACHINERY.

The severe conditions imposed upon brick and clayworking machinery in general demand that gears be especially designed and cut from material that will give long life and reliable operation. Nuttall of Pittsburgh, said to be the largest gear works in the world, has made a thorough study of the operation conditions to be met in the clay product industry and knows the right gear for the right place.

To Prevent Scum Appearing on Your Brick, Terra Cotta, Etc., Use

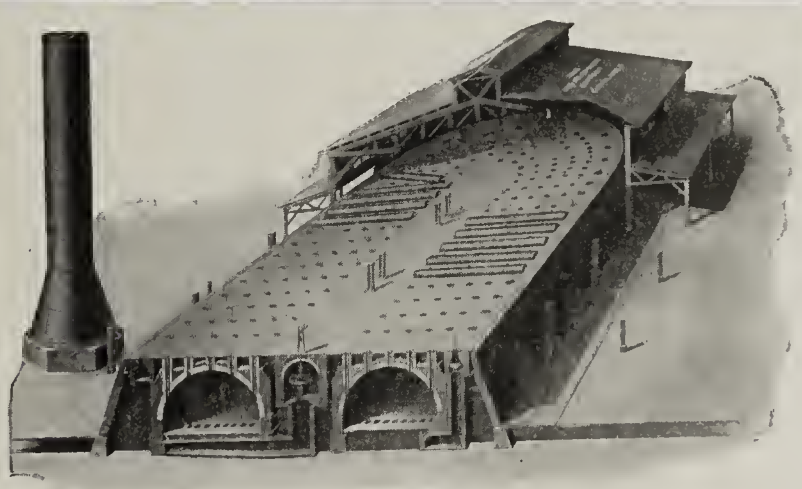
R. H. Precipitated Carbonate of Barytes

Literature on Application

Other High Grade Chemicals For Clay Industries

The Roessler & Hasslacher Chemical Company

100 William Street, New York



REGENERATIVE CONTINUOUS TUNNEL KILN FOR CLAY PRODUCTS

The Gas Machinery Co.
Cleveland, Ohio

Lombard
High Pressure
Horizontal Tubular Boilers
Standard Specifications

Every Lombard Boiler is built with a minimum factor of safety of five.

The material used in the shell plates, in the heads and in the flanged sheets is the best open-hearth homogeneous flange-steel bearing the maker's stamp for 60,000 pounds tensile strength per square inch of section.

The Lombard
Boiler

The Lombard is subjected to a thorough hydrostatic test of fifty per cent greater pressure than the steam pressure which the boiler is designed to carry.

Evry Lombard Boiler is given careful inspection during the test and every seam and rivet is made tight before the boiler is passed for shipment.

The Lombard
Engine

The Lombard Boiler in connection with the Lombard Atlas, Ames or C. & T. Engine makes an ideal combination for the brick yard.

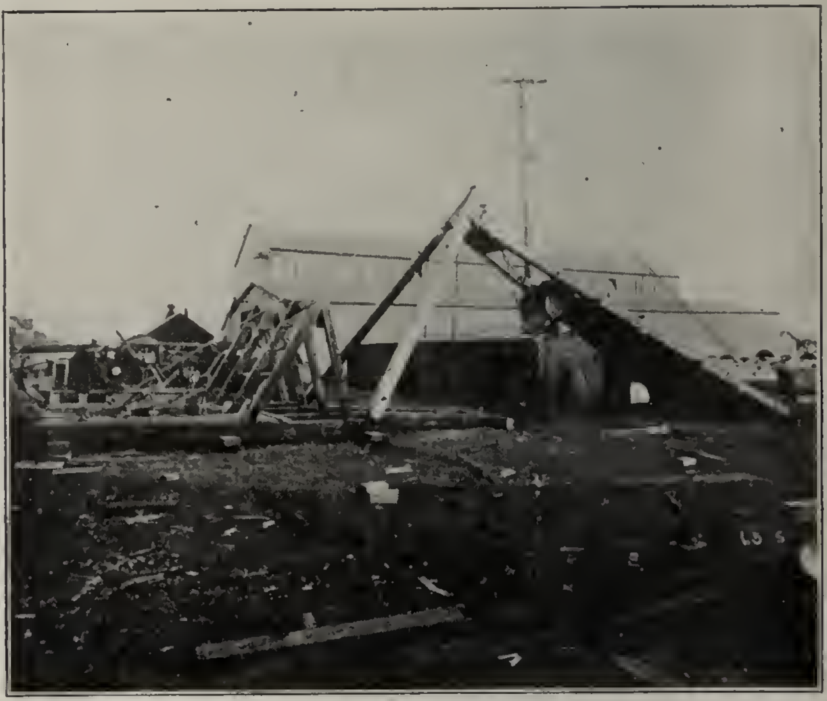
We make a specialty of equipping brickyards with power equipment, and invite correspondence.

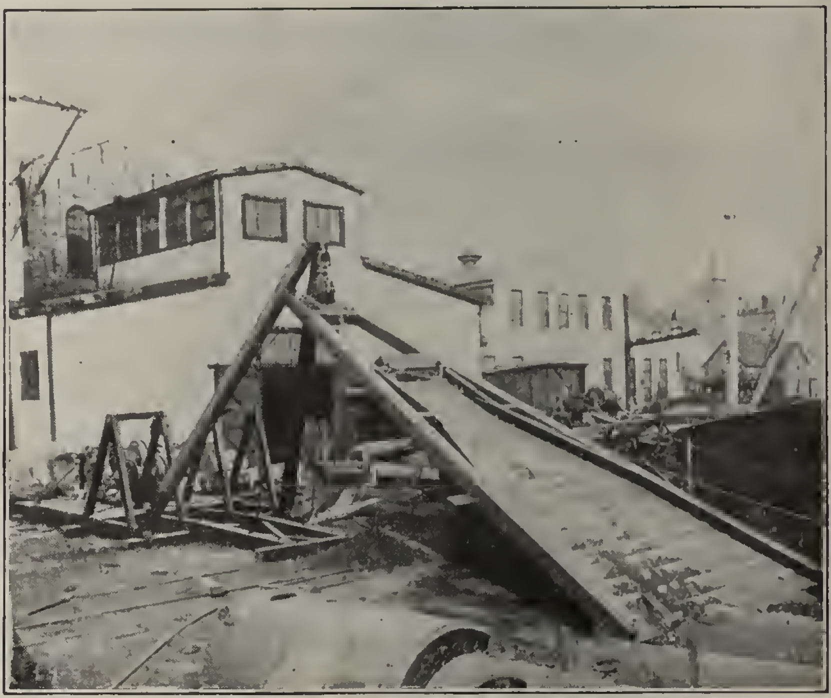
Lombard Iron Works & Supply Co.
Augusta, Ga.

O'GARA
COAL COMPANY
OWNERS AND OPERATORS
24 Mines In
Ohio, Indiana and Illinois
Especially Adapted For
Brick and Tile
Burning
Annual Capacity
7,000,000 Tons
General Office:
Chicago, Illinois

CLYDE SELF-DUMPING EXCAVATOR.

The Clyde Self-Dumping Excavator is being used largely for clay-handling, gravel and sand plants and the like. It embodies a complete excavating machine which at the same time is capable of loading the excavated material itself into small dump cars of the ordinary type such as are used in mines, quarries, etc. It can be moved by its own power without dismantling.





IMPROVEMENTS IN DRYER CARS.

Mean Less Spoiled Ware, Less Labor Cost, Greater Capacity and Greater Profits to the Clayworker.

In offering the Chase Improved Flexible Bearing Folding Deck Dryer Car to the brickmaking and clayworking world, the Chase Foundry & Manufacturing Co. of Columbus, Ohio, is taking another step in the march of progress that clayworkers must join, or be left standing, while the procession of prosperity is passing in review. It is certainly due your own plant, that you see this car before placing your orders for dryer equipment.

In addition to dryer cars, the Chase Foundry & Manufacturing Co. puts out a full equipment of side dump, bottom dump, and general purpose cars, transfer cars, turntables, switches, etc. A card will bring full information that should prove valuable to you.

RECIPROCATING AUTOMATIC CUTTER.

Model T 60 Made by the Freese Company Has Speed and Turns Out No. 1 Product.

The reciprocating automatic cutter shown in the illustration on page 164, and made by E. M. Freese & Co., of Galion, Ohio, is one of the late developments in wire cutters. It has a capacity of 15,000 or more per hour and has several new features.

The cutting frame carries only one set of cutting wires, and has a swinging movement, avoiding the wear and play common to sliding parts. It is actuated by cranks, driven by a single gear and pinion, giving a smooth, quiet starting and stopping of the cutting stroke. The frame remains stationary between cuts, affording ample time to renew broken wires. The platens are very easily removed and replaced, when the thickness of cut is to be changed.

An upper platen (Dunn Patent) can be furnished to insure smooth upper edges on the brick. This is automatically raised to clear the clay column after the cut is completed, and is returned to position in time for the next cut, avoiding any tendency of the column to become wedged. Solves the problem of making smooth edge brick on a reciprocating cutter. Corners of the brick can be rounded without repressing. Either Model is made to suit a variety of work. These cutters can also be especially arranged for cutting the Dunn Wire-Cut-Lug Paving Blocks.

GETTING REAL WIRE SERVICE.

There is nothing more annoying around the clay plant than the sing of a snapping piano wire on the cutter and it is safe to say that more profanity is caused by this one thing than any other. Cutting wires, because of the great strain that is placed on them, are apt to give away unless they are of the very best material and have been properly adjusted. The Webb Wire Works of New Brunswick, N. J., makes a specialty of piano wires for clay machines that will stand the maximum of strain. Because of the unusual care in drawing the wire and the extra precaution taken in selecting the material and tempering it, the Webb Piano Wire is claimed to outlast all other makes. The Webb Company has a small booklet which tells why the Webb wire is better. A copy is free for the asking.

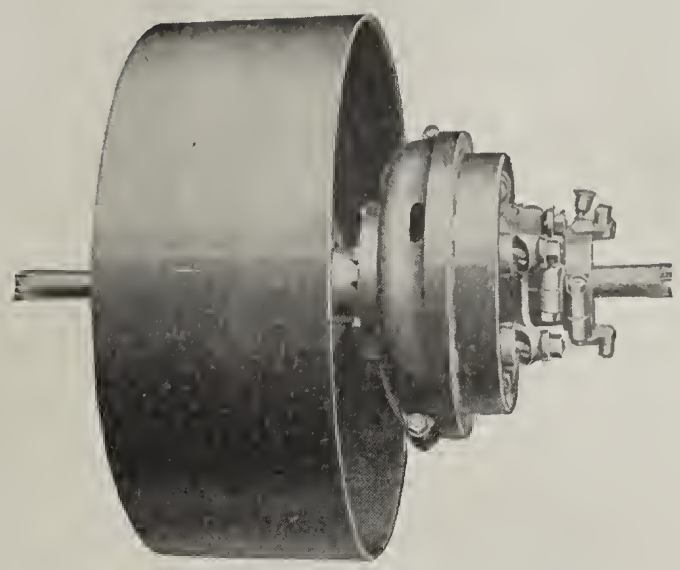
DRIES IN TEN HOURS WITH BOSS SYSTEM.

Attention is paid today to efficiency in manufacturing and there is a constant striving to secure short cut methods and to reduce cost of production, a condition made necessary by increased competition and a cry from the consumer to give him something better at a cheaper price. John C. Boss, the veteran dryer man of Elkhart, Ind., responding to this demand, has devised a drying system which gives the clayworker a short cut in one department at least of his manufacture. He promises to do the drying in ten hours that once required days to do. His proposition is worth at least an investigation.

BELTS THAT ARE ALWAYS FLEXIBLE.

No matter what the conditions of service may be, "Nestor" belts, made by the American Fabric Belting Co., of Cleveland, Ohio, are always pliable, flexible, and never become hard, like a board. If the belting you are using does not live up to this specification, drop a line to the American Fabric Belting Co., and see what it can do, to get you out of your trouble.

DODGE



Dodge Split Friction Clutch in Combination with Split Iron Pulley

Accident Insurance for the Men

The Dodge split friction clutch is to the employe what the $25,000 accident policy is to the employer.

The Dodge clutch enables the manufacturer to drive his machinery in units—without expensive alterations to his present system.

In case of accident—when life and limb are dependent on instant action—the Dodge friction clutch is the only insurance the employe has that he will work tomorrow.

Any unit may be instantly disconnected from the main driving line and power which goes into idle sections of the factory saved by cutting off that section with the Dodge clutch.

A greater margin may be added to profits by breaking up the line of power into individual units, which can be run separately or as a whole.

The Dodge split friction clutch is standardized. It is carried in stock by branches and service agencies.

Get in touch with the Dodge Engineers and have them explain to you the safety, the efficiency, economy and the manufacturing standard which is possible only with the Dodge split friction clutch. If you would like further and more detailed information on the subject, we have an excellent book which is yours for the asking.

Dodge Manufacturing Company

Everything for the Mechanical and Economical Transmission of Power

Mishawaka, Indiana

BRANCHES

Philadelphia 815 Arch St.
Boston 137-139 Purchase St.
Cincinnati 126-128 W. Third St.
Atlanta 28 S. Forsyth St.
Pittsburgh 337 Second Ave.
Chicago 208-214 So. Clinton St.
New York 21 Murray St.
Minneapolis Cor. First Ave. No. & 3rd St.
St. Louis 408 N. Fourth St.
Portland, Ore. 14th & Lovejoy Sts.

Williams Wet Clay Grinder

This is the ONLY machine that will GRIND clay and shale direct from the bank at ALL times WITHOUT CHOKING UP.

ALL ADJUSTMENTS PATENTED

The Williams is manufactured and licensed under ninety-seven separate and distinct patents.

The Only Machine of Its Character Made

The hammers are adjustable and the position of grinding plates may be changed at will while the mill is in motion. This is done by a hand wheel on outside of machine.

The Williams is thoroughly steam-jacketed both front and back, including the hopper, top and bottom of machine.

We Can Work Any Clay
That Will Make Brick

Write for Complete Clay Catalog No. 18 with List of Users and Endorsements.

Williams
Patent Crusher & Pulverizer Co.
Factory: St. Louis, Mo. 2701 No. Broadway
CHICAGO OFFICE: Old Colony Bldg.
SAN FRANCISCO OFFICE: 347 Monadnock Bldg.

THE BOYD PRESS ACME OF EFFICIENCY.

One of the First on the Market, This Chicago Product Kept in the Front by Sheer Merit.

The first Boyd Brick Press was introduced in 1888 and therefore was one of the first practical machines of this type. Designed with the idea that it could not be too well built, its combined principles of construction, design and operation proved so satisfactory by long and constant use that some of its original features are still employed. That the first Boyd Presses, built in 1888-1891, were constructed on the right principles, and for long, hard and constant work, is attested by the fact that most of them are still in use, doing good work.

The Boyd Brick Press is not an imitation; neither is it an untried or experimental machine. It has stood the test of years. It has always been distinguished for its originality in design and construction, strength, endurance and quality of product. It has many distinctive and characteristic features. Like everything of merit, it has been imitated, but the trouble with the imitators is they imitate in appearance only, and forget quality of material and workmanship.

SEND A JUG OF BOILER WATER.

The scientific methods of water treatment employed by the Dearborn Chemical Company, Chicago, are well known to steam users throughout the country, and a visit to their laboratory, in the McCormick Building, where something may be seen of the thoroughness and care as to detail with which the analytical work is handled, as well as the complete equipment of the laboratory for this special department of chemistry, would be most instructive to any one at all interested in this particular subject.

Samples of feed water in various kinds of containers reach the laboratory in large numbers daily, for analysis. These are carefully numbered and subjected to the various tests and processes necessary to determine the kinds and quantities of all the mineral salts present in the water.

It must be understood that in order to effectively treat waters for the prevention of the various harmful effects which these mineral salts produce in steam boilers, there must be an accurate knowledge of these mineral elements, which exist in varying quantities in waters from different localities and sources of supply, as well as the ability to choose without question the proper remedial agent for each substance, which will not cause in combination the formation of deleterious by-products and produce serious after effects.

The Dearborn Company applies to this subject of water treatment a thorough knowledge of chemistry, of practical and theoretical steam engineering and, in addition to accurate analysis of the feed water, make careful study of the plant equipment and operating conditions.

This Dearborn service means increased engine room economy and greater steam production for amount of fuel burned. It is an individual service based on the requirements in each case and is a vital factor in the operation of many thousands of the largest power plants of the country.

MADE NINETY-FIVE THOUSAND BRICK A DAY.

New Haven Soft Mud Machine Makes World's Record For Day's Run.

In a letter received by the Eastern Machinery Company of New Haven, Conn., information was given by the Richmond Brick Co., of Greenridge, Staten Island, N. Y., that on Saturday, May 17, 1913, they had made 95,000 brick with one New Haven Soft Mud Machine. They started out to make 100,000 in a ten-hour day, but at 95,000 they ran out of cars and so had to stop. The 95,000 brick were made in 9 hours and 27 minutes, actual running time. They also state that they can repeat this performance any day in the week—that it was not a case of special stress, and that the machinery ran easily and without a stop.

The fact that this company (The Richmond Brick Co.) has three of the New Haven machines on their yard and that it has used New Haven machines for ten years, indicates that this line of machinery is not only built for speed, but for endurance.

There seems to be a great deal of truth in the Eastern Machinery Co.'s claim that their machine is "the machine that makes the profits."

TWENTY YEARS OF FULFILLED PROMISES.

Bonnot Company Uses Motto Which Carries Conviction to Machinery Buying Clayworkers.

"There is an experience of more than twenty years back of Bonnot machinery. There is no charge for that but you get the benefit of it." This quotation is taken from a recent advertisement of the Bonnot Company of Canton, Ohio, which appeared in "Brick and Clay Record," and is a most excellent motto to use in one's plea for public patronage.

No concern that exists and grows for twenty years is builded on a foundation of sand. A verification of fulfilled promises, of careful dealings, of honest products, must underlie a manufacturing establishment that can weather the storms of modern competition for that period of time.

The Bonnots certainly have made clayworking machinery long enough to justify the confidence of the trade and the enormous business enjoyed by this concern proves that they have gained this signal distinction.

MAKES WINTER OPERATION POSSIBLE.

The problem of using frozen or very wet clay is one that confronts many clayworkers and limits their operation to a short, summer season. The American Process Co., of 68 William St., New York, offers a way out of the difficulty, through the installation of its Rotary Clay Dryer, which assures a uniform product in any season and under all weather conditions.

POLICY EXTENDS BEYOND BOOKING ORDER.

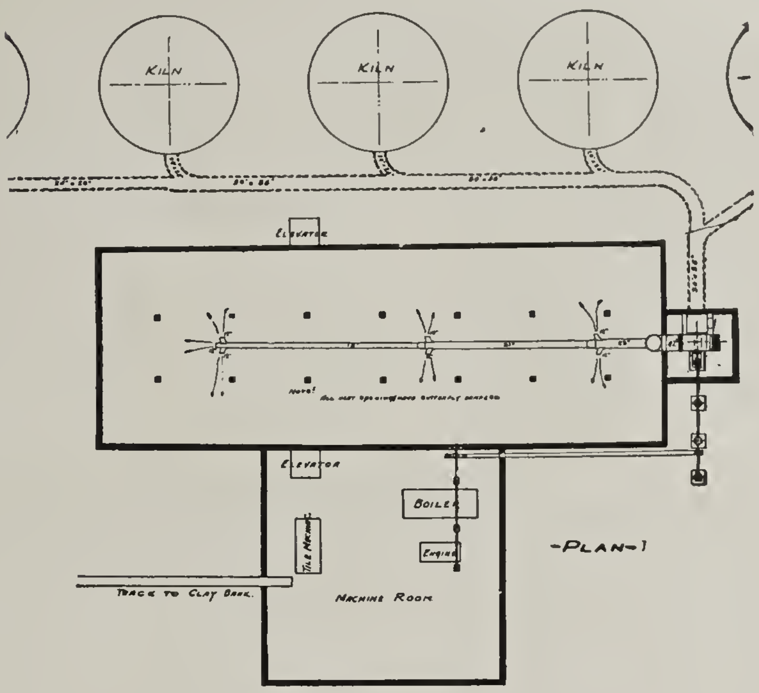
The policy of the Frink Pyrometer Co., of Lancaster, Ohio, includes the practice of introducing the Frink Method of Burning, during the installation of the pyrometer equipment. A long experience is behind this well established concern and the information it will send to clayworkers is well worth applying for.

Double the Capacity of Your Drying Room

By installing a Green brick drying system in which the temperature of the air entering the room and the quantity can be adjusted to a nicety.

Green brick drying systems use the Positivflo heater in which all of the steam pipes are collected in a small space.

The temperature of the air and the quantity fed per minute are absolutely under control—you can dry fast or slowly as you desire, and can be entirely independent of weather conditions.



WASTE HEAT DRYER.—In the above plant a fan draws heated air from the kilns that are cooling off and forces it into four distributing pipes placed, one in each story, down the middle of the dry house and having outlets at intervals on either side to blow the air in among the tile. The latter are raised from the machine room to the several floors by an elevator and are removed from the drying floors to go to the kilns by another elevator on the opposite side of the house. The fan is driven by belts and shafting from the same engine that drives the tile machines. The fan and the plans were supplied by the Green Fuel Economizer Co.

Have you investigated our method of waste heat drying, in which we dry all of your brick at practically no cost? A number of prominent brick yards are using this scheme at present. Write and ask us for full particulars. Our catalog, B "105", "On Drying Brick and Tile," will also interest you. Better write for a copy today.

The Green Fuel Economizer Co.

Matteawan, N. Y.

New York City, Boston, Chicago, Atlanta, San Francisco
Los Angeles, Seattle, Salt Lake City, Montreal

Engineers: Builders of Green's Fuel Economizers, Fans, Blowers, and Exhausters, Steam Air Heater Coils, Waste Heat Air Heaters, Mechanical Draft, Heating and Ventilating and Drying Apparatus, Draft Dampers and Engines.

0

DRYING AND BURNING
A Common Sense Application

The Boss Ten Hour Dryer
Dries brick in ten hours time for less than 5c per thousand.

The Boss System of Burning Brick
Burn your brick with FORCED DRAFT and cut your fuel bill HALF IN TWO.

WRITE FOR CATALOG
JOHN C. BOSS COMPANY, ELKHART, INDIANA
ORIGINATORS OF THE PRINCIPLE OF DRYING AND BURNING BRICK WITH AIR UNDER PRESSURE

CUTTING WIRES

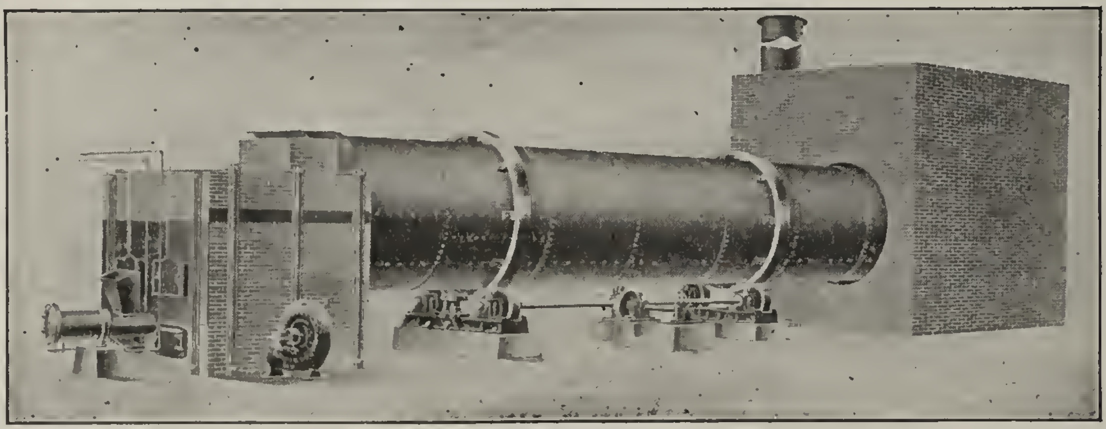
STRENGTH UNIFORMITY DURABILITY REG. U.S. PAT. OFF.

We beg to announce that we are now making up our Red Label Piano Wire into looped wires ready for the cutting-off machine.

Our Wire wears well and our Loops last long.

A postal will bring our Price List and our price is low.

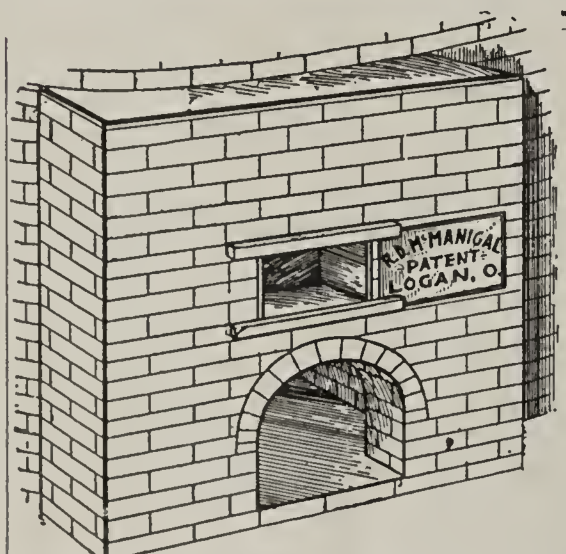
THE WEBB WIRE WORKS
NEW BRUNSWICK, N. J.



ROTARY CLAY DRYER

DRY YOUR CLAY
AT LOW COST
YOU CAN THEN OPERATE IN ANY WEATHER OR SEASON
It Assures Uniform Product
YOU CAN THEN SCREEN TO ELIMINATE PEBBLES, ETC.

American Process Co.
68 William Street
NEW YORK



THE McMANIGAL GRATELESS FURNACE

For burning brick or clay products. This furnace is constructed without the use of grates, thus saving the expense of installing and repairing. It is so constructed that your coal is coked and you get the benefit of all gases and heat. Absolutely nothing lost. Reduces your fuel cost from 15% to 40%, besides saving from one to three days' time in burning.

Write for information. Will furnish most modern plans for round or rectangular, down draft kilns.

These furnaces are covered by patents both in the United States and Canada. A representative for the introduction and sale of them in Canada is solicited. All infringers will be prosecuted.

A FEW OF THE PLANTS NOW USING OUR FURNACES

Cleveland Brick & Clay Co., Cleveland, Ohio.
Bradford Pressed Brick Co., [2 plants] Bradford, Pa.
Bradford Fire Proofing Co., Bradford, Pa.
John Kline Brick Co., Cleveland, Ohio.
Alumnia Shale Brick Co., [2 plants] Bradford, Pa.
Sterling Brick Co., Olean, N. Y.
Latrobe Brick Co., Latrobe, Pa.
Yingling Martin Brick Co., Johnsonburg, Pa.
Alliance Clay Products Co., Alliance, Ohio.
Wadsworth Brick & Tile Co., Wadsworth, Ohio.
Brighton Fire Brick Co., New Brighton, Pa.
Johnstown Clay Products Co., Johnstown, Pa.
New Mexico Fire Brick Co., Gallup, N. M.
Bloomsburg Brick Co., Bloomsburg, Pa.

Address R. D. McMANIGAL, Mgr., Logan, Ohio

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BR

SPECIAL FEATURE—SAFE FACTORY CONSTRUCTION

BRICK and CLAY RECORD

CASPER P. MAYER
PRESIDENT EASTERN PAVING BRICK MFRS. ASS'N

Classified Ads Pages 335-338

CHICAGO, AUGUST 1, 1913

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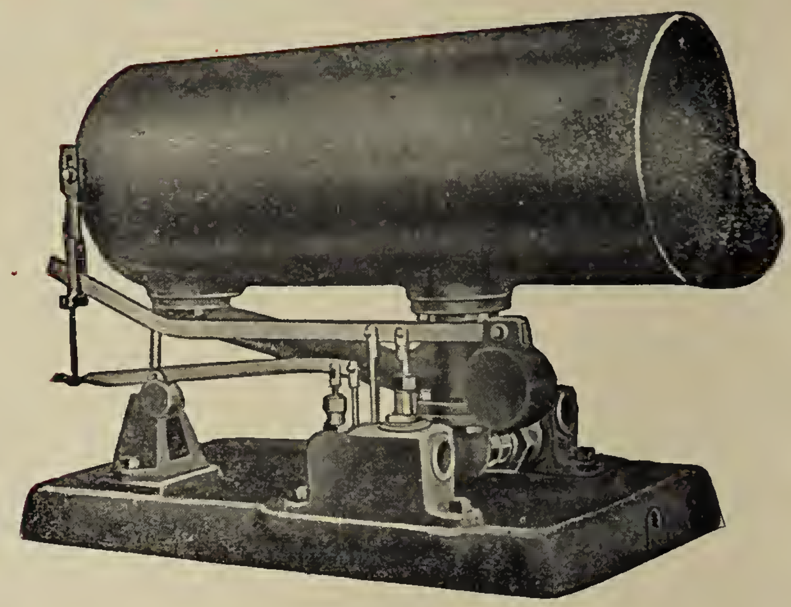
ck and Clay Record" Has Double the Paid Circulation of Any Other Clay Journal Published

"Detroit"
RETURN TRAPS



make it possible for your dryers to work "up to capacity" all the time by keeping the steam coils free and clear of condensation, which if allowed to collect, kills the heat value of the new incoming steam.

"Detroit" Traps save 90 per cent of the steam required to operate a pump.

Every operation is automatic.

Every working part is on the outside and interchangeable.

Nothing on the inside of tank to rust, corrode, stick or give trouble.

Steam and air valves are in same cast iron body (renewable disc).

A bumper at one end of trap receives full weight of water as tank tilts, relieving stress on trunnion and eliminating the usual "smash and bang."

Your condensation trouble will be given careful attention by our Steam Trap Department.

Ask for Catalog No. 352-B

AMERICAN BLOWER COMPANY
DETROIT, MICH.
U. S. A.

Canadian Sirocco Co., Ltd., Windsor, Ont., Manufacturers for Canada

Address home office or nearest branch

New York, 141 Broadway
Rochester, N. Y., Insurance Bldg.
Philadelphia, Hale Bldg.
Pittsburg, Empire Bldg.

Chicago, Marquette Bldg.
St. Louis, Title Guaranty Bldg.
Atlanta, Empire Bldg.
Minneapolis, Plymouth Bldg.

San Francisco, Rialto Bldg.
Los Angeles, Central Bldg.
Seattle, Maritime Bldg.
Portland, Beck Bldg.

BRICK and CLAY RECORD

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The Editor's Corner

A Department Wherein is Set Apart Comment and Opinions on Some of the Graver Problems Confronting the Clayworker and Co-Laborers

PRICE-CUTTING is business piracy. It overrides the craft of industrial progress and pounces upon the seamen of commercial sanity. It strips Profit of its righteous own. It cheats Success of its greatest opportunity.

No buccaneer of the high seas ever plied his cutlass with more reckless disregard, nor seized the cargoes of his victims with greater greed, than Pirate Price-Cutter.

Men may spend years in building a business. They may follow ALL the rules of square dealing. They may make an HONEST merchandise and they may draw to themselves a SATISFIED patronage through conservative methods, and yet, in one fell swoop, Pirate Price-Cutter may come along and upset all and plunge them into bankruptcy and SMILE because he himself has NOTHING at stake.

Pirate Price-Cutter sails the seas of ALL industries. He is seen wherever man strives to make a living by regular methods.

He is in the clay product fields. He runs amuck the brickmaker. He bumps into the craft of the sewer pipe manufacturer. He meets the drain tile man on the high seas of commercial strife. He is everywhere.

USUALLY he is the retailer. This is true in the grocery trade. It is true in the automobile business. It is true in every line of human endeavor.

And the brickmaker suffers with the others.

There is an AWAKENING sign, however. The manufacturers in many industries are striving to organize to combat the price-cutter. In some cases these efforts are meeting with exceptional success.

It remains, nevertheless, for the clay product industry to establish the real precedent.

Recently there was organized an association of honest retailers. These men sell brick. For years they have felt the sting of the Price-Cutter.

Seeking to play fair with the manufacturers they represented—with the patrons to whom they sought to give an honest deal, and with themselves as well—they decided on a campaign of EXTINCTION.

The organization of the Face Brick Dealers' Association followed.

This body of men has as one of its announced principles the extermination of the Price-Cutter.

How are they to reach this desirable goal?

Primarily by one of the SIMPLEST of processes—the open price policy.

And there is no other legal way by which this can be done, and there is no other way by which it can be done so easily, legally or otherwise.

What is the Open Price Policy?

The Open Price Policy means, simply, just what it says—nothing under cover.

Every dealer, who is working under its benign influence, PUBLISHES to his competitors just what price he is charging for his wares.

He does not state what his price is GOING to be—that would be illegal and in violation of the law.

What he does do is to tell his companions what his price HAS been.

Price-cutting is dishonest. Dishonesty DISLIKES THE LIMELIGHT. It breeds best in DARKNESS. What is the answer?

The honest face brick dealers of the Nation are not single-handed in this fight.

The manufacturers—represented by the American Face Brick Manufacturers' Association—have pledged their support, their money and their labors.

If the Price-Cutting Dealer is wise he will cleanse himself, reform, turn his steps into the straight and narrow way and welcome the new order of things.

In a subsequent issue "Brick and Clay Record" proposes to take up the subject of the open price policy and explain it in detail.

The Open Price Policy is a GOOD thing to KNOW about and a GOOD thing to FOLLOW. Every clayworker in the nation should be its advocate and sponsor.

FAILURE to have a speaking acquaintance with the men whose names appear on the weekly payroll is ONE of the contributing causes of an unsuccessful clay plant.

You may have a MODEL plant—from the standpoint of equipment. You may have an IDEAL proposition from the quality of clay or shale your bank supplies. You may have a PERFECT selling and manufacturing force as men go—but if there is not TEAM WORK between yourself and your men and among your men, you will fail to get the FULLNESS of efficiency out of either the men or the machinery.

There was a reader of "Brick and Clay Record" in this office a few days ago who illustrates this point perfectly.

This friend visited Chicago for the express purpose of trying to interest some one in a plant in which he was interested.

The plant was not unprofitable—for it has made a return on the investment, although short of what it should.

And he did not want to sell ALL the plant, but just enough to insure that some one who had a financial interest in it would take hold and run it as it SHOULD be run.

The trouble with our friend is that he has so many irons in the fire he cannot devote the necessary attention to the business, and it suffers.

For instance, he is attorney for a large corporation in his home city. He also is a money lender and he conducts a real estate business. In addition to these interests he has investments in several minor industries of his home city.

And then, there is the clay plant.

Some one showed him the need of a brick and tile yard in his little city. Being public spirited he undertook to establish one. He subscribed $60,000 of the $100,000 that was raised to build the plant.

Then he employed a competent man as superintendent and an able man to look after the selling and shipping end.

The plant sold every ounce of the product it could make and good prices were obtained for what was sold because there was little or no competition.

Still, the business is not satisfactory. Instead of returning a FAIR dividend to the investors it has paid just enough to come under the wire as a dividend.

Our friend was very frank in discussing his troubles.

"Where I am lame," he said, " is in my inability to keep in touch with the employees."

He had employed young and energetic men of experience for the executive positions. They worked faithfully. They were conscientious.

One day he called his superintendent to him and asked him why the plant was not bringing in better returns on the investment.

The young man told him that it was because he—the employer—did not come around often enough to be consulted about matters that required consultation.

Investigation revealed the fact that every man in an executive position had the same complaint to make.

There was disorganization everywhere. Lack of teamwork was apparent in every department. The men worked hard enough—they strove to give a FULL performance of their duties, but there was no harmony of action—no concerted effort—no unity of purpose.

There is only one thing for this employer to do, and that is to find some one who is willing to take a small financial interest in the plant and who, through this interest, will watch every little detail and be responsible for the conduct of the plant.

No matter how small or how large a plant may be, it is neither too small nor too large for the executive head to keep in touch with his men.

One successful clayworker makes it a practice to have bi-weekly meetings with all his employees. These sessions are open meetings and the men are urged to come prepared to make suggestions and discuss what each suggests.

Then, too, once a week, for one hour, this employer meets each of his executives—his superintendent, his sales manager, his burner, his pit man, and his bookkeeper. These meetings are held for the purpose of hearing the views and ideas these men have.

Through these conferences the employer gets many valuable suggestions which he puts into use to HIS OWN PROFIT and to that of his men.

But that is not ALL the advantage he gains by these conferences.

His men, for instance, being human and feeling that they are contributing to his success know this fact is being recognized, and they unconsciously give greater efficiency.

Elbert Hubbard Is to Write
for "Brick and Clay Record"

BRICK AND CLAY RECORD ENGAGES INIMITABLE WRITER AND PHILOSOPHER TO PREPARE SERIES OF ESSAYS FOR ITS READERS ∴ ∴ ∴ ∴

"BRICK AND CLAY RECORD" has marked an evolution in technical journal publication the past year. Casting aside all precedent—ignoring long-established customs, it has stepped out from the hide-bound rules for making ordinary trade papers into a broader and more useful work.

What it has achieved our readers well know. What it expects to accomplish in the future must be left to the future. It is well to say, however, that progress will mark every step and that the announcement made on this page is but one of the many good things in store for our readers.

ELBERT HUBBARD is going to write for "Brick and Clay Record." Fra Elbertus, the Roycrofter from East Aurora, as he is more familiarly called, needs no introduction. He is known all over the civilized world through his philosophic writings in his own and other publications, and his short-arm jolts from the lecture platform. Possessing a trenchant pen, a pungent wit, a wonderfully brilliant vocabulary and a style that is inimitable, Fra Elbertus never fails to entertain, no matter what his subject may be.

"Brick and Clay Record" is not content with printing a trade publication—it wants to do more. It wants to print an INTERESTING trade paper. During the past year many important improvements have been made in the magazine. During the coming months it expects to make many more. Fra Elbertus is going to be one of the active participants in this effort.

A trade publication may be alive—it may possess the human element—it may be entertaining as well as instructive.

It is true our friends read "Brick and Clay Record" because it tells them all the latest developments in their field, but they also read it because it presents its information in an INTERESTING way and through the pen of ENTERTAINING as well as INSTRUCTIVE writers.

In keeping with this policy this journal has secured a series of special articles from Fra Elbertus. These articles will be printed in the first-of-the-month issues.

No subject has been assigned to Fra Elbertus. He will write as his conscience and his inspiration dictates. It is not likely that he will write about brick-making—it is not likely that he will write about brick-selling, although Fra Elbertus can write intelligently on pretty much anything required of him.

It is safe to wager, however, that whatever subject he choses will be one which he will entertainingly handle and that all who follow him will profit thereby.

Fra Elbertus does not live in a narrow world. He is unlike the woman who had lived in a large city all her life and spent seventy per cent of that time in a hotel. This woman visited the country home of a family friend—her first trip beyond the confines of the metropolis. Upon her return to her hotel home she was asked what impressed her the most. She paused a moment and smiling, answered, "Why, the way the farmer paged his cows!"

You see this woman thought more narrowly than in the terms of a city—she thought in the terms of a hotel. Her thoughts were inelastic.

Not so with Fra Elbertus.

He has lived in the world and of the world. He has rubbed elbows with all mankind. He has gathered a wealth of experience—a mine of philosophy—an ocean of knowledge.

The first article of this series will appear in the September 1 issue. It will interest the clay-worker, his family and his friends.

A Man Who Stands the Test of Life's Rattler

Being a Few Words About a Paving Brick Manufacturer Who Says He Knows No Such Word as "Impossible"

Casper P. Mayer

President, C. P. Mayer Brick Company, Bridgeville, Pa.

IN the dictionary that Casper P. Mayer uses the pages that contain the words "cannot" and "impossible" have been torn out. Self-educated and self-made, he has, by believing so- called impossible things possible and living up to "can" while others stopped at "cannot", made himself a prominent figure, not only in the world of paving brick, but in other industries of national importance.

Starting in the clayworking business about twenty years ago—the construction of his plant having been begun in 1893—he has had time to learn many of the intricacies of the brickmaking craft. He admits that when he started he thought that any man with ordinary intelligence ought to be able to make good brick cheaply.

It did not take long to change that opinion, at least so far as face-building brick, fire-brick and paving-brick are concerned.

This change of mind came to light at the Convention of the National Brick Manufacturers' Association in 1906, when he related his troubles to the assembled brickmakers and brought forth the comment that "He was only cutting his eye-teeth."

Mayer admitted this to be a fact, and declared the job was costing him about $5,000 a tooth.

The year following, his paper read before the same body was entitled, "Cutting Eye Teeth," and is still remembered by many who were fortunate enough to attend the St. Louis convention.

In 1908 Mr. Mayer converted his plant, which first, had made common brick, then face brick, into a paving brick outfit. Since then its success has never been in doubt. Recent additions and improvements have made it one of the dominant factors in the paving brick business, east of the Ohio river.

The Eastern Paving Brick Manufacturers' Association, of which Casper P. Mayer is the first president, was organized in the early part of the present year, for the purpose of giving local force to the campaign of education and promotion that is being waged by the National Paving Brick Manufacturers' Association.

Working along well-planned district lines, it is distributing information as to the cost, durability and comparatively light maintenance of brick paved streets, and showing the fallacy of make-shift paving that, while cheap in its first installment, takes a heavy toll in upkeep.

It is working to establish a uniform selling contract that will protect alike the brickmaker, the paving contractor and the taxpayer, who, after all, is the real consumer, and it is seeking to set up a reasonable, but nevertheless high standard of excellence, to which all paving brick used in public work shall conform, to the end that the future of brick as a paving material may not be jeopardized by unscrupulous manufacturers, aided by dishonest inspection.

In electing Mr. Mayer to its presidency, the Eastern Paving Brick Manufacturers' Association gave the strongest sort of evidence of its intention to carry out the work outlined, without fear or favor, for Casper P. Mayer is a fighter, hating hypocrisy and underhand methods, soft-hearted, but big-fisted, and with that quality of human nature that strikes and strikes hard, when hard hits are needed.

And they proved themselves possessed of good judgment, for no man in their number is better fitted to lead the movement that will make "the dustless road" the rule, rather than the exception, in the district that lies east of the Ohio river and the Pennsylvania line.

The Royal Typewriter Factory at Hartford, Conn.

Safe Factory

Can a modern factory building, with all the necessary provisions for safety, for light, for load-bearing walls, for vibrations of machinery and for architectural flexibility be constructed of imperishable, fire-proof, frost-proof, heat-proof burned clay as cheaply as of concrete?

This article by Mr. Whalen answers the question.

THAT the hundreds of thousands of dollars expended annually by the cement interests to boost concrete as a building material, in carefully planned advertising and general publicity campaigns, have had an effect on the unthinking layman is not to be wondered at. The fad for concrete residences and small buildings, that swept the country from coast to coast, but which is now, happily, on the wane, proves how easily is the general public misled.

That the thinking architect and the careful builder, however, should treat seriously concrete in structures where load-bearing walls, the crushing strength of material, the first cost of construction, the question of light and safety and the matter of insurance, are to be considered as factors, is a surprise.

Crumbling concrete walls, higher insurance, plainness of design, lack of flexibility in architecture, failure to stand the test of time—none of these drawbacks appear to have any influence on some builders.

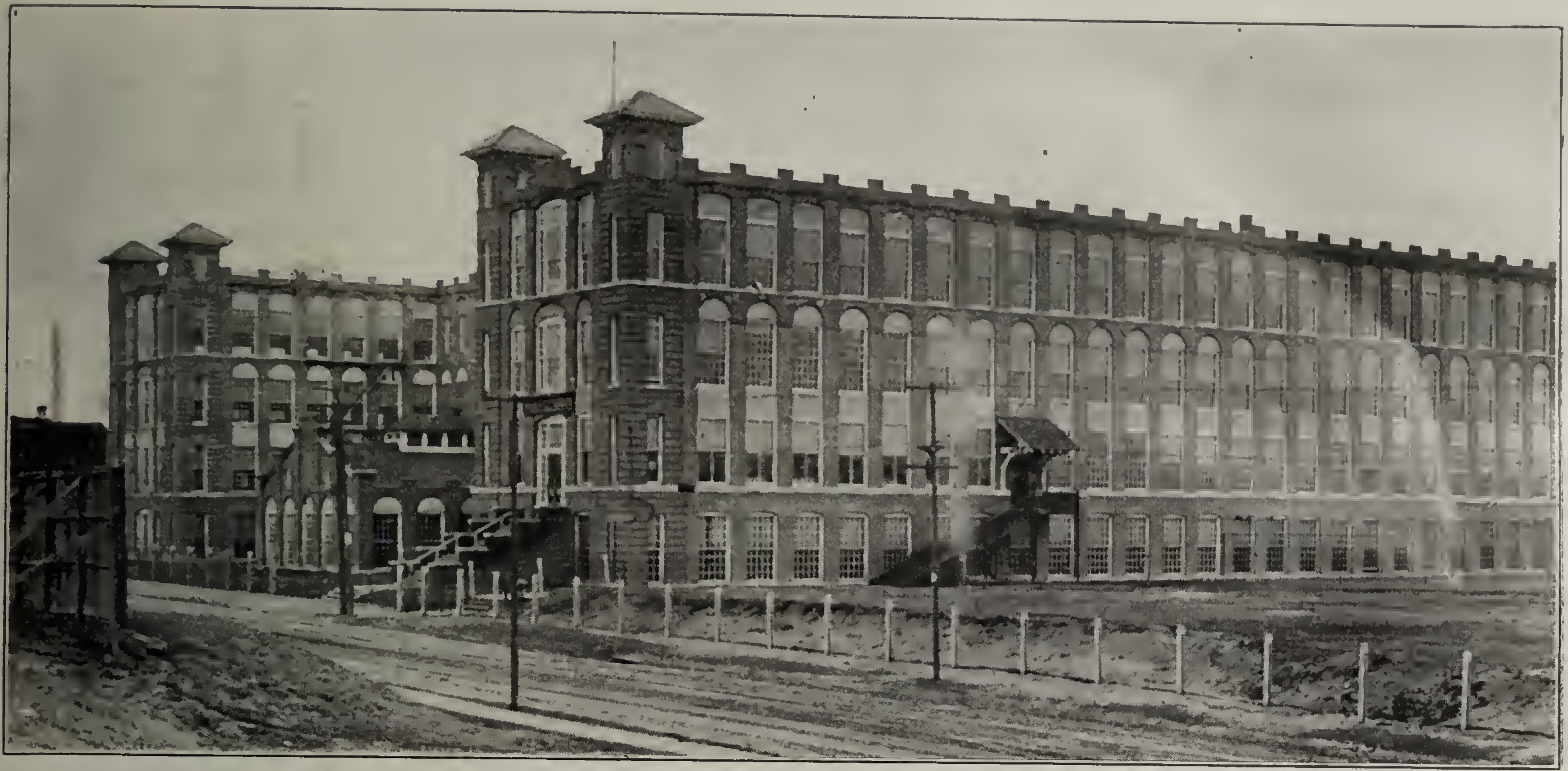
The cry of low-cost construction and great light area has overshadowed all else and caused caution and good judgment to be cast aside.

Re-inforced concrete factory buildings, covering areas hitherto considered impossible, are in course of construction in many states.

Space for the machines and operators is the first consideration in any plan for a factory. Strength to carry the extreme floor loads in safety, in addition to the weight of the building itself, is just as essential. This includes the stability to resist or absorb with minimum injury to the building or the machines all the shocks or vibrations set up by the manufacturing operations.

Lighting and ventilation, properly received, are most important when many operatives work, and especially when niceness and accuracy of workmanship are required. In fact, perhaps no one factor will so reduce the general efficiency as bad lighting and ventilation. Efficiency is the maker of dividends, and in this view these features at once are seen to be of prime importance.

To remodel or alter quickly and inexpensively often proves a valuable feature, especially in some of the newer industries. And if it is possible to get beauty in the whole structure and in its grounds this also is being listed



Another View of the Royal Typewriter Building—A Model Construction

Construction

THE following article prepared by a staff correspondent of this Journal, who made a special investigation covering several weeks in the factory district of a New England state, explodes the main theory of the concrete advocates. Comparative costs of re-inforced concrete and the brick and steel construction, gives the latter a decided advantage. Concrete, in so-called fire-proof construction throughout, averages $1.77 per sq. ft. of floor space, while brick and steel, with concrete floors, averages $1.20. Plain solid brick with wood mill construction interior is found as low as $1 per sq. ft. floor space.

This investigation further shows: That brick and steel construction will give as much light area as any concrete construction, and, as in the cases herein illustrated, even more.

That broad windows can be secured in brick as readily as in concrete.

That strength to resist shock and to bear loads is better in brick and steel.

That elasticity of brick and steel is greater and that these materials will better absorb the jar of machines and so give longer life to them.

That brick and steel is safer.

Despite the fact that concrete walls absorb moisture, are unsightly, crumble and disintegrate and cost as much, if not more, than brick and steel, there are engineers who urge concrete's use.

Is it because concrete makes it possible to secure larger light area? Mr. Whalen declares brick and steel give more light and proves it by facts.

as an important feature by progressive business men.

The Royal Typewriter Works of Hartford, Conn., answers very well to the several counts. The building is a balanced manufacturing unit and can be duplicated as business grows with no losses of reconstruction. Portions of this unit were built in different years, but this fact can not be discovered by any appearance or joining in the structure.

The ground floor space is 38,150 square feet. Size over all, 247 ft. by 308 ft. Wings, each, 50 ft. by 308 ft. The bar of the H is 50 ft. by 147 ft. The single story portions are 50 ft. by 129 ft., giving a total floor space of 165,400 square feet, exclusive of the eight short "L's" in the court. The first three stories are 15 ft. each in height and the top story 17 ft. Cost per square foot of floor space is less than $1.50.

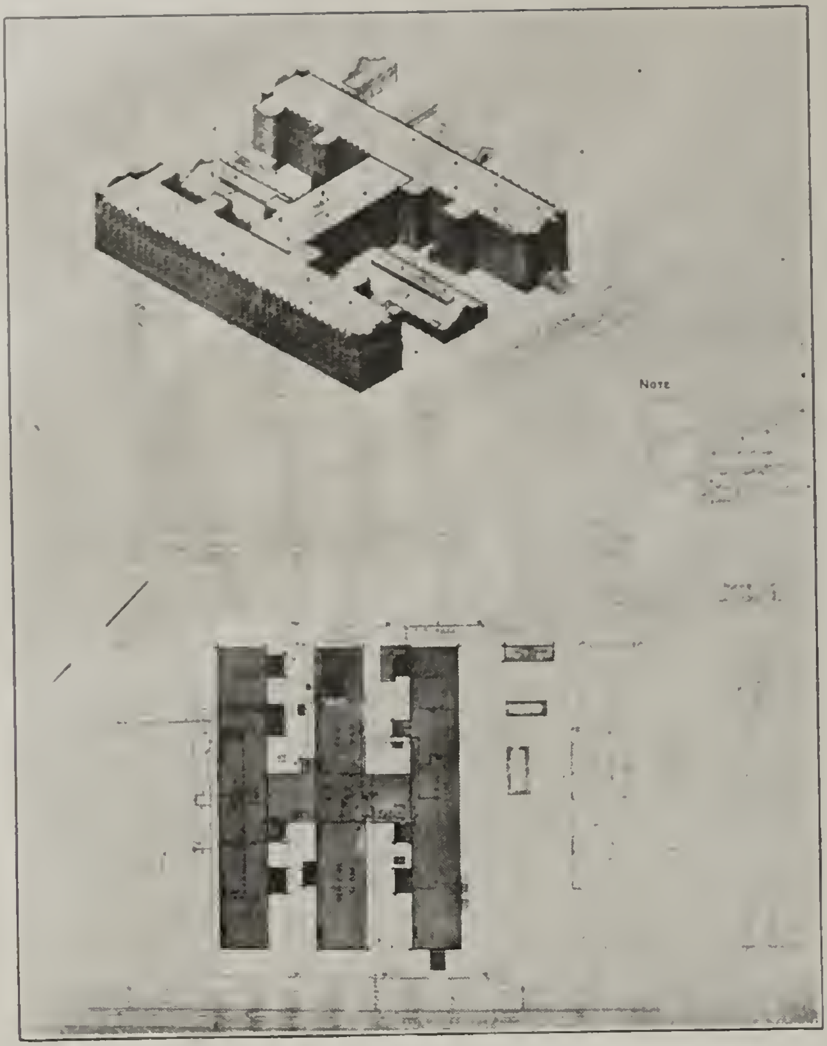


Fig. 3.—Ground Plan and General Design of the Royal Typewriter Company's Building.

Outer walls are brick work exclusively, except in the "'spandrels" of third floor, where steel beams and stuccoed panels are used and the excellent effect of tall pillars is secured. Also in the arch of third story the same method completes the effect desired. With this exception all panels beneath windows are arches and segment arches, and the load of each window and panel is thus conveyed directly to pillars at floor line and there is no shearing strain on the masonry. Spring of arch is at ceiling line and window tops are flush with ceiling, allowing perfect entrance of light which follows white ceiling.

Walls are 28 inches thick in first two stories, 21 inches, third, and 16 inches, fourth story. The interior is mill construction with 12 inch by 12 inch posts, except top floor, which is 10 inch by 10 inch. Floors resting on timbers are 2x4, solid spiked, making a 4-in. thickness and this is covered with a 1-in. diagonal sheathing floor and 1⅛ matched maple.

"There are no cracks or defects," said L. H. Anthony, chief engineer of the Royal Company recently. "The buildings are six years old, and rest on grounds that contain quicksands and water drainage strata. We know of no more satisfactorily lighted buildings and our ventilation is as good as our light. We believe our architects* would be pleased to answer any inquiries regarding the structure.

As features of probably most general interest, we will add data of the lighting area, the wall area and the comparative area of pilasters (or columns) and panels (or spandrels) in this factory and in some others. The main consideration will be the design and proportion of the exterior walls with reference to the light obtainable and the strength of the walls.

Exterior walls should be strong enough to carry their full share of the floor load, as well as their own weight and should contribute their own share of rigidity in the direction of their thickness. And in the direction of their length these walls should be above criticism in rigidity. The walls must provide light openings and the whole outer shell protect the structure and contents from the weather—and keep right on doing this.

The Royal Typewriter Works, shown in Figures 1 and 2, which head this article, has detail measurements as follows:

	Width.	Height.	Area.
Bays	8′	15′	120 sq. ft.
Window openings	6′	10′ 10″	65 sq. ft.
Pilasters	2′	15′	30 sq. ft.
Panels	4′ 2″	6′	25 sq. ft.

Window openings are 54% of total area.
Pilasters are 25% of total area.
Panels are 21% of total area.

More of the materials is in the uprights than in the panels. The strength of the wall is the pilasters which convey all load direct to the foundation. There is but a short span for the panel and this is easily bridged and the window load conveyed to pilasters by the inexpensive masonry arch, and steel is used only in the panels of the third story windows.

As a general proposition, the load of any building bears straight down, and the design of any building should place the larger proportion of the materials in the piers, and not in the panels.

Now compare figures 4 and 5. Fig. 4 appears at first sight, and especially when one views the whole building, to have a larger percentage of opening for light than Fig. 5. Note the following tables:

Table for Fig. 4.

	Width.	Height.	Area.
Bays	16′	16′	256 sq. ft.
Window openings	12′	10′ 4″	124 sq. ft.
Pilasters	4′	16′	64 sq. ft.
Panels	12′	5′ 8″	68 sq. ft.

Window openings are 48% of total area.
Pilasters are 25% of total area.
Panels are 27% of total area.

Table for Fig. 5.

	Width.	Height.	Area.
Bays	8′	14′	112 sq. ft.
Window openings	5′ 4″	10′	53⅓ sq. ft.
Pilasters	2′ 8″	14′	37⅓ sq. ft.
Panels	5′ 4″	4′	21⅓ sq. ft.

Window openings are 47 6/10% of total area.
Pilasters are 33 3/10% of total area.
Panels are 19% of total area.

Note that Fig. 4 is an unusual and mixed type of

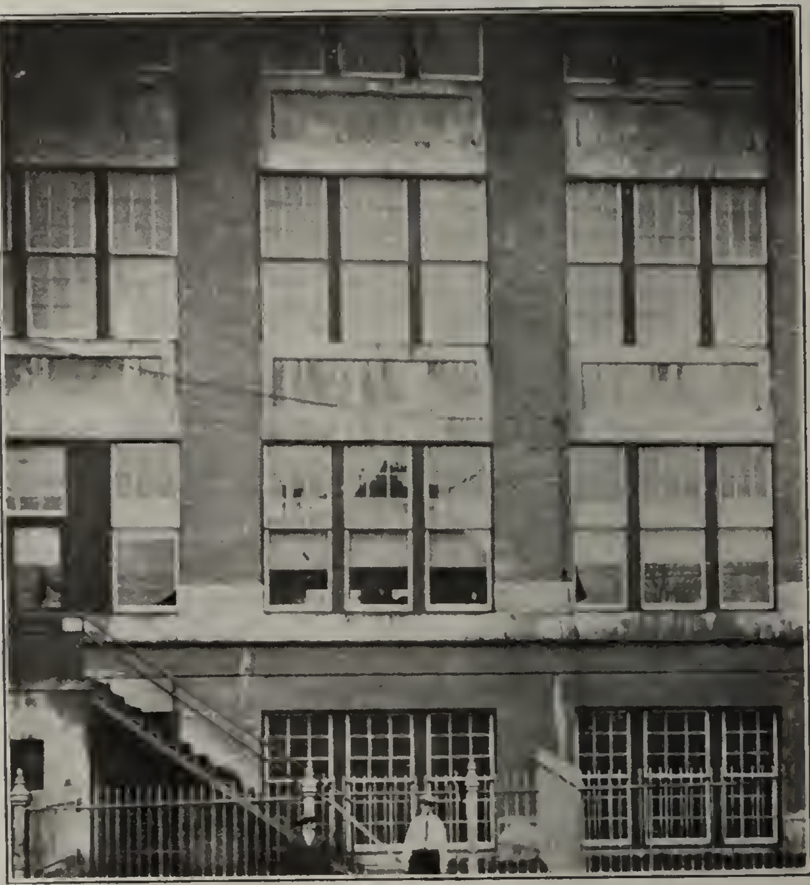


Fig. 4.

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*S. B. Allen, of Springfield, Mass., is the architect of the mill plan; Albro and Lindberg, consulting architects, and B. H. Hibbard, of New Britain, Conn., contractor.

building. It is claimed by the builders to give better lighting and to be a more rigid building than the type shown in Fig. 5. As a matter of fact, the tables show that it ranks lower in total strength and no higher in lighting, and is defective in lighting because of the construction of the panel the base encroaches on the story below, and prevents the light entering at ceiling line.

No defects, cracks, mottling or decay of walls are discovered in the design of Fig. 5. There are none in the walls. It is an honored, respectable, time-tested and dependable form of construction. Look at Fig. 4 and judge if you can say as much for it.

Let us take two more examples and compare in a similar manner. The type shown in Fig. 6 is a rather extreme type and appears to have much more light than the one shown in Fig. 7*, but the difference in lighting is very small and Fig. 6 has much less load bearing and shock resisting strength than Fig. 7. Note the following table:

Table for Fig. 6.

	Width.	Height.	Area.
Bays	16′	13′ 6″	216 sq. ft.
Window openings	14′ 2″	9′ 7⅜″	136 2/10 sq. ft.
Pilasters	1′ 10″	13′ 6″	24 7/10 sq. ft.
Panels	14′ 2″	3′ 10⅝″	55 sq. ft.

Window openings are 63% of total area.
Pilasters are 12% of total area.
Panels are 25% of total area.
The cost of Fig. 6 was $1.70 per sq. yd. of floor space.

Table for Fig. 7.

	Width.	Height.	Area.
Bays	16′ 5″	16′	262 4/10 sq. ft.
Window openings	13′ 7″	11′ 4½″	154 4/10 sq. ft.
Pilasters	2′ 10″	16′	45⅓ sq. ft.
Panels	13′ 7″	4′ 7½″	62⅞ sq. ft.

Window openings are 59% of total area.
Pilasters are 17% of total area.
Panels are 24% of total area.

The table shows very plainly the greater strength of Fig. 7. The gain made in lighting power in Fig. 6, compared with Fig. 7, is but four points in 63, while the loss in pilaster strength in Fig. 6, compared with Fig. 7, is five points in 17. Part of the reason for this is that in Fig. 6 type the bays are broader in proportion to their height and this makes the proportion of pilaster seem less, but the main reason is that the pilaster in Fig. 6 is but 1′ 10″, while in Fig. 7 the pilaster is 2′ 10″, and the proportion of material in pilasters is actually less in Fig. 6 than in Fig. 7. This weakness of Fig. 6 type would still further show up if the thickness of respective walls were figured. The wall of Fig. 6 is but 13″ to 16″; the walls of Fig. 7 are 28″.

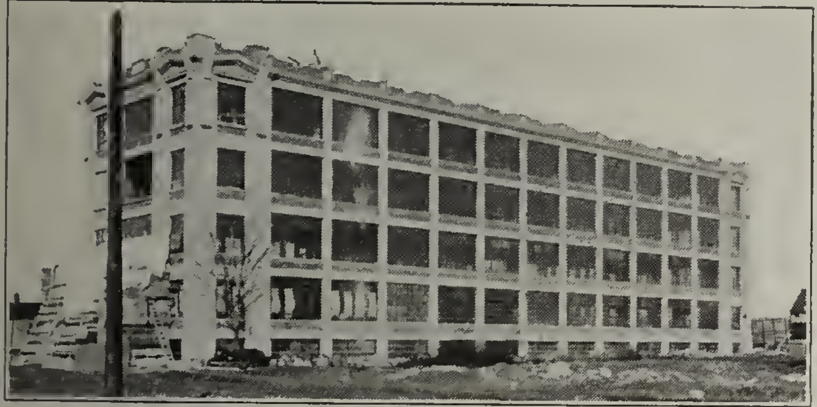

Fig. 6.

The construction of Fig. 7 is brick outer walls with steel posts and floor beams in the interior, with reinforced concrete floors. Steel beams span the window openings, no cracks in the walls, and no lack of light. The building is six years old and is used in the manufacture of heavy machine tools and gives heavy duty service.

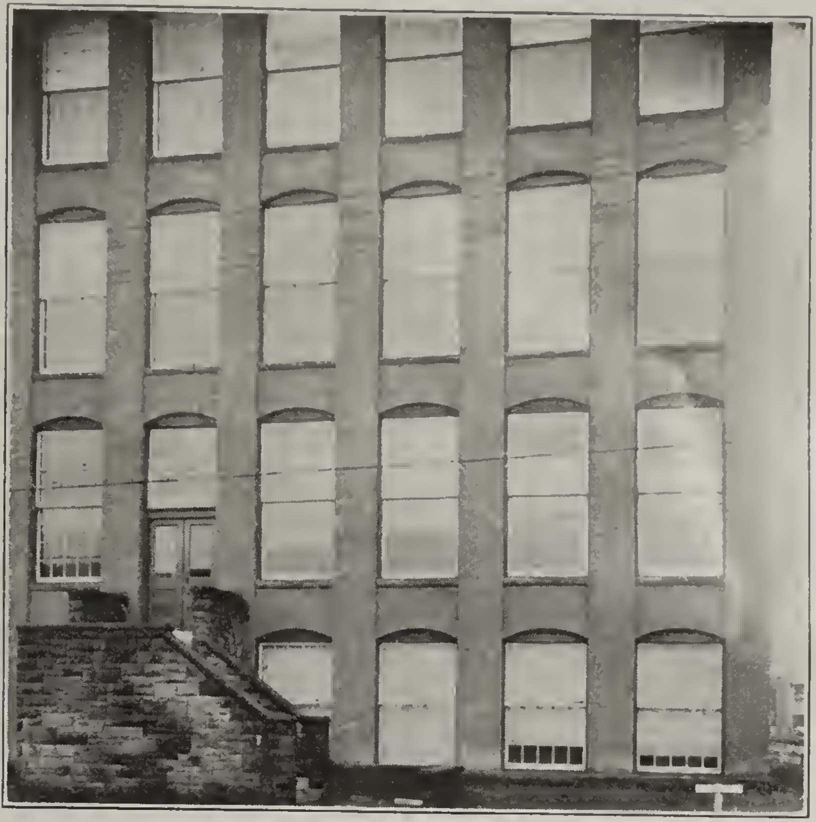

Fig. 5.

The construction of Fig. 6 is reinforced concrete, and when completed will be used for light manufacturing purposes. Especially note the extreme lightness of the pilasters. It would seem that this construction was not wholly justified by any recognized standards. If not heavily reinforced it would not, of course, be thought suitable. It is yet to be demonstrated that steel rods used for vertical reinforcement give any material increase in the crushing strength of the column.

The illustrations, Figures 8 and 9, and the tables below, are of buildings that stand on adjoining streets. The one in Fig. 8 gives the impression to ordinary observers of being better lighted than the one shown in Fig. 9. Compare the tables carefully:

Table for Fig. 8.

	Width.	Height.	Area.	Per Cent of Total Area.
Bays	24′ 3″	14′ 4″	347½ sq. ft.	
Window openings..	21′ 9″	9′	195¾ sq. ft.	56.33%
Pilasters	2′ 6″	14′ 4″	35 8/10 sq. ft.	10.3 %
Panels	21′ 9″	5′ 4″	116 sq. ft.	33.38%

Panels encroach 12″ upon story below, making base of lintel or top of window 12″ below ceiling. Light is not received at ceiling line. Construction, reinforced concrete faced with brick.

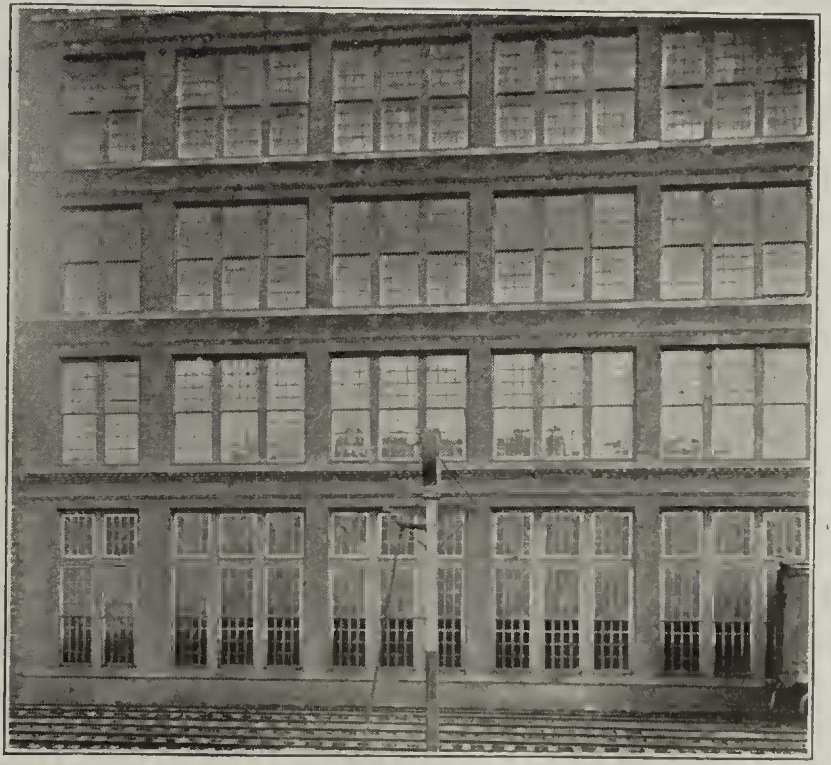

Fig. 7.

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*Fig. 7 is made from a picture of the north side of building next to railroad and is very smoky, making cut appear very dark.

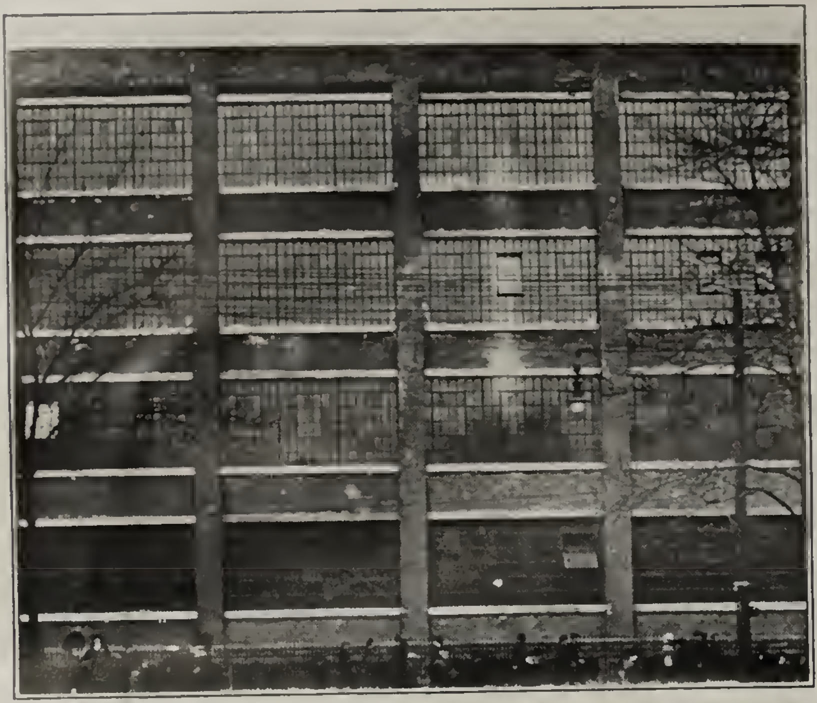


Fig. 8.

Table for Fig. 9.

	Width.	Height.	Area.	Per Cent of Total Area.
Bays	10′	13′ 6″	135 sq. ft.	
Window openings	7′ 9″	10′ 6″	81⅜ sq. ft.	60.3%
Pilasters	2′ 4″	13′ 6″	31½ sq. ft.	23. %
Panels	7′ 9″	3′	23¼ sq. ft.	17.2%

Light is received at ceiling line. Construction is brick with steel frame. Pilasters are solid brick. Granolithic floors over reinforced concrete. Cost per sq. ft. floor space, not counting heating, lighting and plumbing, $1.16 per sq. ft.

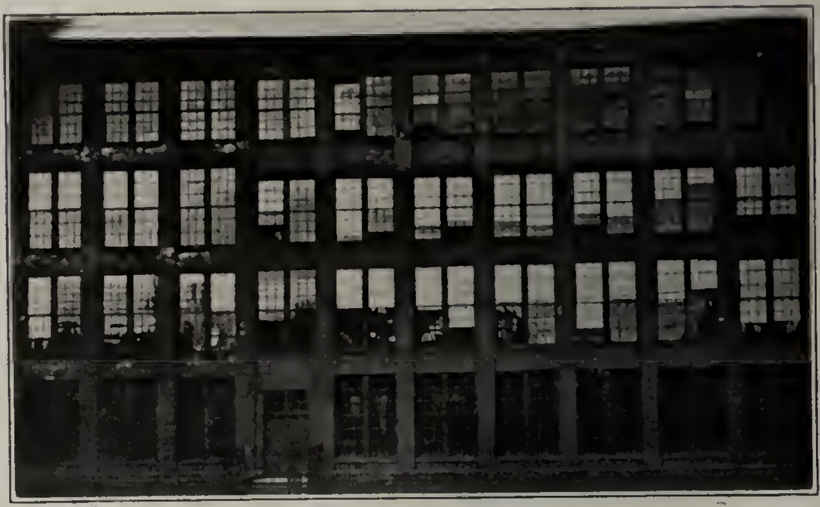


Fig. 9.

One manufacturer uses three methods of construction in buildings built in a period of several years, the last giving the best satisfaction. The first building built is shown in Fig. 10. It is massive reinforced concrete. The second building shown in center section of Fig. 10 and again in Fig. 11 is brick walls, steel frame and steel truss lintels. The building is 30 ft. wide. Ceiling is but 12 ft. high. The owner would prefer a higher ceiling and wider building.

The third and last building is 40 ft. wide and has 12 ft. ceiling, to match previous structure. Construction is steel frame throughout. Brick pilasters have steel center which is part of steel frame of building. Windows are narrower, panels are shorter span. Could be lower in height and admit light next floor if desired. The general statement of owners was that the brick buildings were cheaper, were more satisfactory in general and were much quicker to erect and occupy.

Where the broad window with fewer pilasters is desired, the results obtained in Fig. 11 show brick construction practicable for same. Note the following table:

Table for Fig. 11.

	Width.	Height.	Area.	Per Cent of Total Area.
Bays	18′	12′	216 sq. ft.	
Window openings	16′ 3″	8′ 4″	135.42 sq. ft.	62.69%
Pilasters	1′ 9″	12′	21 sq. ft.	9.72%
Panels	16′ 3″	3′ 8″	59.58 sq. ft.	27.58%

Table for Fig. 12.

	Width.	Height.	Area.	Per Cent of Total Area.
Bays	9′	12′	108 sq. ft.	
Window openings	7′	8′ 4″	58⅓ sq. ft.	54 %
Pilasters	2′	12′	24 sq. ft.	22.22%
Panels	7′	3′ 8″	25⅔ sq. ft.	23.76%

The following design is especially interesting because it meets so nearly all the requirements of a perfect factory building. Note especially that the steel is kept separate from the masonry in the pilasters; the narrower bays have more frequent pilasters and shorter spans; the total light area is the largest shown in any design, yet the percentage of wall material in the pilaster is also large. This is a factory building designed by one of the most trusted and widely known architects of industrial plants.

The exterior walls are brick. Pilasters or columns are steel uprights made of two steel angles placed back to back and wrapped. This column is wrapped around with tar paper and tied. Brick work is built around this upright and any settling of expansion of brick work or steel

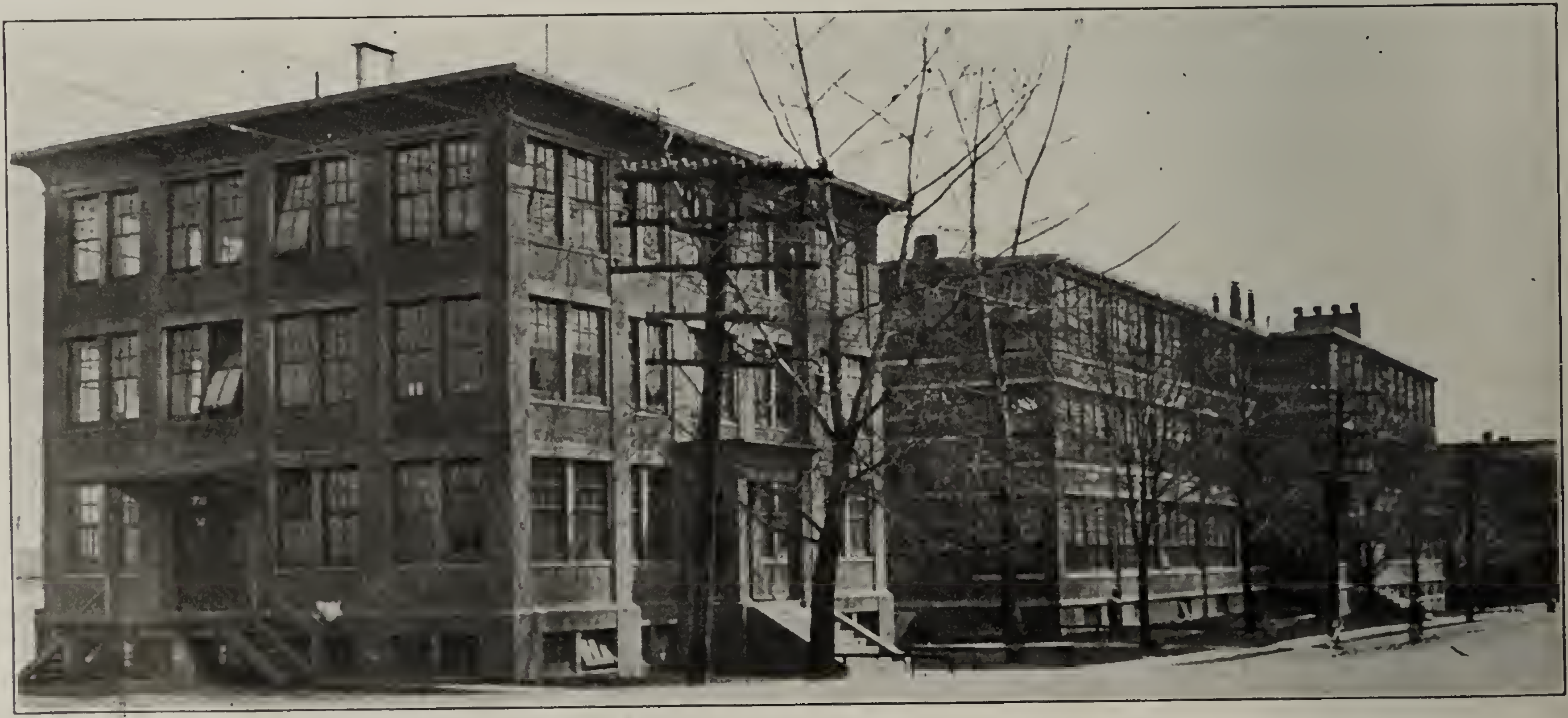


Fig. 10.

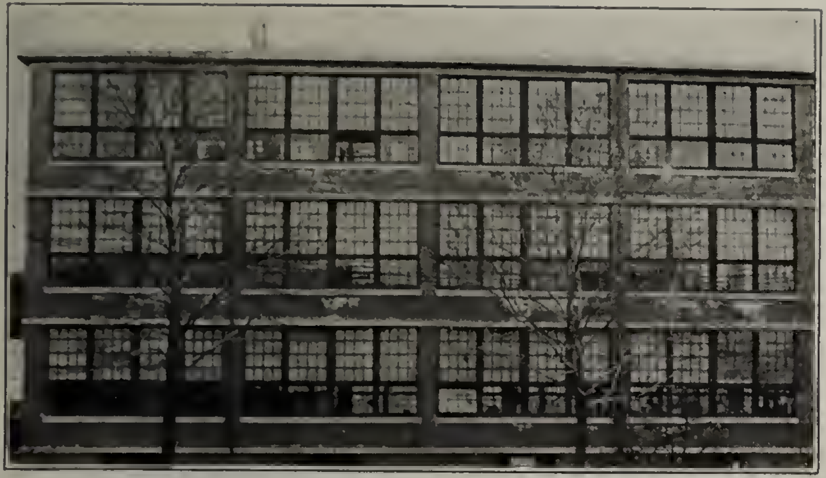


Fig. 11.

pier may occur independently. The floor beams are I beams which carry five-inch planks overlaid with sheathing overlaid with surface floor. Where floor beams join steel columns in pilaster one-half inch wood is inserted on top of I beam. Brick built on top of this as part of the wall remains free of the I beam when wood is knocked out. The entire brick work of columns is thus self-contained. The steel construction is also self-contained, each, however, contributing as much to the strength and rigidity of the other as could be were they built solidly in contact at every point.

This construction will absorb shocks and vibrations of operations on factory floor and transmit probably the minimum amount to the wall masonry. The combined wood and steel of the floor give an elasticity and cushion quality very desirable for many types of machines.

Detail of Bay.

	Width.	Height.	Area.
Each bay	11′	16′	176 sq. ft.
Window openings	9′	12′ 8⅜″	114 28/100 sq. ft.
Pilasters	2′	16′	32 sq. ft.
Panels	9′	3′ 3⅝″	29 7/10 sq. ft.

Window openings are 65% of total area.
Pilasters are 18 2/10% of total area.
Panels are 16 6/10% of total area.

This table shows a larger light area combined with a greater total of strength in the columns than any other shown, and is probably almost the ideal in which a logical balance between light areas and wall strength is reached. The construction is very simple and elastic to suit any requirement in design, and is readily and inexpensively altered with the least destruction of materials.

The comparative cost of the reinforced concrete and the brick and steel construction arrived at by the judgment and figures of many contractors, factory owners and designing engineers of industrial buildings gives a decided advantage to the brick.

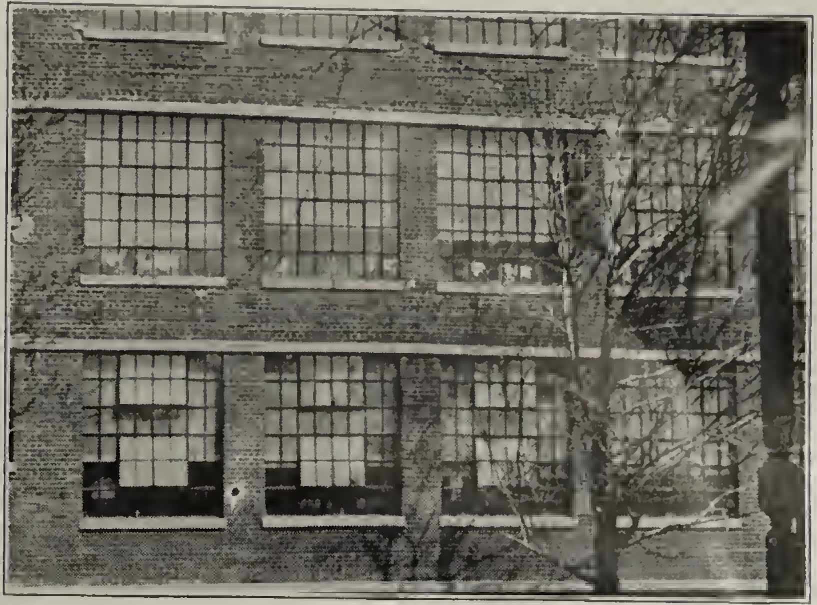


Fig. 12.

The cost ranges from $1.77 per sq. ft. of floor space—the concrete building fireproof throughout—to as low as $1.26 in the brick and steel with concrete floors, fireproof throughout. Plain solid brick with wood mill construction interior was found at as low as $1.00 per sq. ft. floor space, the average advantage being much in favor of brick.

The tables show that brick and steel construction will give as much light areas as any concrete construction. The light is received at ceiling line in all brick construction found, but in concrete, with one exception, the light is baffled at the ceiling line by lintel encroachment on lower story. Overhung lintels and under-swung joining floorbeams, at added expense, seem the only way to overcome this serious difficulty.

Broad windows can be secured in brick as readily as in concrete construction.

The strength to resist shock and to bear loads is better in every case in the brick and steel construction.

The elasticity of brick and steel is greater than concrete and will better absorb the jar of machines and so give longer life to machines.

The danger of cracking is less in buildings of brick and steel. On this point several mill superintendents make decided claims for the superiority of brick construction.

The superior appearance of brick work is admitted by the use of brick facing and panel work to relieve the monotony and give weather resisting surfaces.

NEW BRICK PLANT FOR CHICAGO.

E. K. Cormack Interested in Large Enterprise Which Will Make Shale Commons.

There are good prospects of a large shale brick plant, for the manufacture of building brick, being built within a hundred miles of Chicago.

Mr. E. K. Cormack, representing a number of people, has secured options on two very favorable pieces of ground, and at present is having tests made of the raw material. A carload of material from one of the places was shipped to an Illinois brick yard, where it was made up into brick, and is now being burned.

It is the intention of the promoters of this plant, that the plant shall start out with a capacity of 150,000, but to be built so that the capacity can be increased to 250,000. The brick to be manufactured are what is known as common shale builders.

GET LARGER CERAMIC BUILDING.

University of Illinois Allots $65,000 for New Class Rooms and Ceramic Laboratory.

"Brick & Clay Record" is in receipt of the following letter from A. E. Huckins, Secretary of the Illinois Clay Manufacturers' Association, under date of July 28:

> "I presume that you know we received our appropriation of $65,000. I will give you the details when I see you later. Thanking you for your assistance in that matter, I remain, Very truly yours, A. E. Huckins, Secy."

This is good news for the clayworking trade—the University was crowded, so far as its ceramic department was concerned, but this new appropriation will give it facilities that will help to establish a department of ceramics in Illinois that will be second to none in the country.

Fix Standard Tests for Brick

SUGGESTS SPECIFICATIONS COVERING "VITRIFIED," "HARD BURNED," "COMMON FIRSTS" "COMMON SECONDS" AND MISCELLANEOUS

BRICK and its kindred clay products—the most extensively used of all structural material, at last has been given recognition by the American Society for Testing Materials, and a set of standard specifications prepared with which architects and engineers may for the first time in the history of iron, use for an intelligent consideration.

The specifications are embodied in a special report by Committee C3 made to the society at its sixteenth annual meeting held in Atlantic City, N. J., June 24-28, and cover both building brick and paving block.

These specifications place burned clay products on a par now, so far as the engineering and architectural world is concerned, with iron and steel, cement and cement products, and other structural material.

Prof. A. V. Bleininger, of the U. S. Bureau of Standards, Department of Geology, is chairman of Committee C3 which drew up the specifications. His report on building brick follows:

At the twelfth annual meeting of the Society in 1909 this Committee, designated at that time as Committee D, submitted a report including some suggested specifications, which were offered for use but not intended, at that time, for adoption. The lack of accurate knowledge regarding the properties of brick, the methods of testing them, the relations existing between the properties which could be measured and their influence in the finished structure, compelled the Committee to refrain from any definite recommendations. This condition has continued during the succeeding years and little progress has been made. In 1911 the Committee was considerably enlarged and organized into two sub-committees, one on building brick, the other on paving brick. A program outlining a series of investigations was formulated and has through the co-operation of some of the manufacturers and testing laboratories progressed sufficiently to yield some reliable results. It is hoped that during the coming year a greater number of laboratories may become interested and assist in the collection of much needed data.

The University engineering and the laboratories of large companies have during the past twenty years devoted a large amount of energy and money to the investiagtion of steel and steel products; the new and attractive alloys; cement and cement products; and built up members involving these materials in their construction.

Brick, the most extensively used structural material in the country, and ceramic materials, such as hollow tile, terra cotta, fireproofing and the mortars used with them, forms one of the most fertile fields for engineering investigation.

In the preparation of the following suggested specifications the Committee has felt that its chief aim should be to provide methods for contractual testing.

The numerical requirements included in the suggested specifications are therefore limited to those properties upon which the Committee has at the present time sufficient information to enable it to indicate reasonable values. The transverse test and the numerical values for the compressive strength after freezing and thawing have been omitted for the lack of sufficient data. The Committee recognizes the value of these tests and expects to obtain information on them during the next year. As a comparative test between different kinds of brick the transverse test may be considered as a modified tensile test to determine the cohesion of the materials and to form a valuable estimate of their relative resistance to transverse action in a structure when subject to uneven bearing, settling and temperature changes. It also assists in the determination of the effect of various kinds of lamination.

For the purpose of making comparative tests and for the proposed investigations of the Committee, the following methods are suggested:

TRANSVERSE TEST.—At least five brick shall be tested, laid flatwise with a span of seven inches, and with the load applied at midspan. The knife edges shall be slightly curved in the direction of their length. Steel bearing plates, about ¼ inch thick by 1½ inch wide, may be placed between the knife edges and the brick. The use of a wooden base block, slightly rounded transversely across its top, upon which to rest the lower knife edges is recommended. The modulus of rupture shall be obtained by the following formula:

$$R = \frac{3We}{2bd^2},$$ in which e is the distance between supports in inches, b is the breadth and d the depth of the brick in inches, and W is the load in pounds at which the brick failed.

There can be no question of the far-reaching value of the freezing test since information of this nature referring to all of stonelike building materials is urgently needed. If the freezing test is desired, the Committee suggests the following method:

FREEZING TEST.—At least five brick shall be dried as specified under "Sampling" below, weighed and immersed in water which shall be raised to boiling in not less than 30 minutes, boiled for 30 minutes and then allowed to cool between 60° F. and 80° F. The specimens shall be immersed in water below 40° F. for not less than one hour, then transferred to the refrigerator and supported in such a manner that all be exposed. They shall be subjected to a temperature not above 20° F. for at least four hours, then removed and placed in water at a temperature between 60° F. and 80° F. and raised to boiling. The freezing and thawing operation shall be repeated twenty (20) times, after which the brick shall be dried as before and weighed. The condition of the bricks shall be noted before and during the test and all visible changes recorded. If it is desired to express the loss of weight in percentage, it shall be computed upon the dry weight.

CLASSIFICATION.—In attempting to establish values in the "Requirements," the Committee has been confronted with the difficulty of not only having to meet the numerous uses of brick but the wide divergence in various parts of the country on account of the different natural materials available for manufacture. The difficulty has been overcome by forming a classification which, it is believed, will meet these conditions.

Suggested Specifications.

SAMPLING.—For the purpose of tests, brick shall be selected to represent the commercial product by an experienced person agreed upon by the parties to the contract. All brick shall be carefully examined and their condition noted before being subjected to any kind of test.

For the purpose of tests ten (10) brick will be required, which shall be thoroughly dried to constant weight in a suitable oven at a temperature of from 225° F. (107° C.) to 250° F. (121° C.).

COMPRESSION TEST.—Compression tests shall be made on at least five (5) half brick, each taken from a different brick. The half brick shall be prepared either by sawing or by breaking upon a yielding bed with a sharp mason's chisel which shall be the full width of the brick. To secure a uniform bearing in the testing machine they shall be bedded in a thin coat of plaster of Paris, spread upon a plate glass surface coated with a thin layer of oil. The brick shall be pressed firmly upon the surface, making the layer as thin as possible, and remain undisturbed until set. Before applying the plaster of Paris, the bearing surface of the brick shall receive a coat of shellac. Recessed or paneled brick should be brought to full bearing surface by filling the depression with neat Portland cement mortar, which shall stand at least 24 hours before the plaster of Paris is applied.

The machine used for the compression test shall be equipped with a spherical bearing block kept thoroughly lubricated to insure accurate adjustment, and the adjustment should be made by hand under a small initial load. During the test the beam of the testing machine must be kept constantly in a floating position. The breaking load shall be divided by the area in compression and the results reported in pounds per square inch.

ABSORPTION.—At least five dry brick shall be weighed and completely submerged in water at a temperature between 6$° F. and 80° F, the water heated to boiling within one hour, boiled continuously for four (4) hours, then allowed to cool in the water to a temperature between 60° F. and 80° F. They should then be removed, the surface water wiped off with a cloth and the brick quickly weighed. The percentage of absorption shall be computed on the dry weight.

Requirements.

Class A.—Vitrified Brick. Average compressive strength, not less than 5,000 lbs. per sq. in.; minimum comp. strength of any specimen in test, not less than 4,500 lbs. per sq. in.; average absorption, not more than 5 per cent.

Class B.—Hard Burned Brick. Average compressive strength, not less than 3,500 lbs. per sq. in.; minimum comp. strength of any specimen in the test, not less than 3,000 lbs. per sq. in.; average absorption, not more than 12 per cent.

If subjected to the freezing test, they shall not show cracking or serious spalling in any of the bricks tested or serious disintegration of the material.

Class C.—Common Brick, First. Average compressive strength, not less than 2,000 lbs. per sq. in.; minimum comp. strength of any specimen in the test, not less than 1,800 lbs. per sq. in.; average absorption, not more than 18 per cent.

If subjected to the freezing test, they shall not show cracking or serious spalling in any of the bricks tested or serious disintegration of the material.

Class D.—Common, Second. (These brick to be used only for backing up and for interior walls involving small loads.) Average compressive strength, not less than 1,500 lbs. per sq. in.; minimum comp. strength of any specimen in the test, not less than 1,200 lbs. per sq. in.

Miscellaneous.

Any brick other than clay may be included in class A., B. or C., provided they meet the specified requirements and when the freezing test is required, it shall not show cracking or serious spalling in any of the brick tested or serious disintegration of the material.

Several hundred delegates were present at the convention and among these were the following representatives: Will P. Blair and Spencer M. Duty, of Cleveland, O.; Casper P. Mayer, of Bridgeville, Pa.; W. T. Blackburn, of Paris, Ill.; J. G. Barbour, of Canton, O.; J. W. Hall, of Baltimore, Md., and F. B. Dunn, of Conneaut, O. Professor Bleininger read an instructive paper on "The Testing of Refractories" and committee reports of especial interest to clayworkers were presented, one of which was the report of Committee C-4 on "Standard Specifications and Tests for Clay and Cement Sewer Pipe" and of Committee C-6 on "Standard Tests and Specifications for Drain Tile."

The full text of these reports, together with that of the report of Committee C-3 that deals with paving brick, will be published in "Brick & Clay Record" at an early date.

Tom Murray Goes to Minneapolis.

After spending several years with the Warren B. Ferris Brick Company, of Columbus, Ohio, T. J. Murray has gone to Minneapolis, Minn., where he will be in charge of the brick department recently established by the Thompson-McDonald Lumber Company of that city and St. Paul. This concern operates seven yards, and expects to make itself felt in the brick field. John F. McDonald, treasurer of the Thompson-McDonald Company, is vice-president of the Minneapolis Building Material Exchange and is recognized as one of the live wires in the building material business in the Twin Cities.

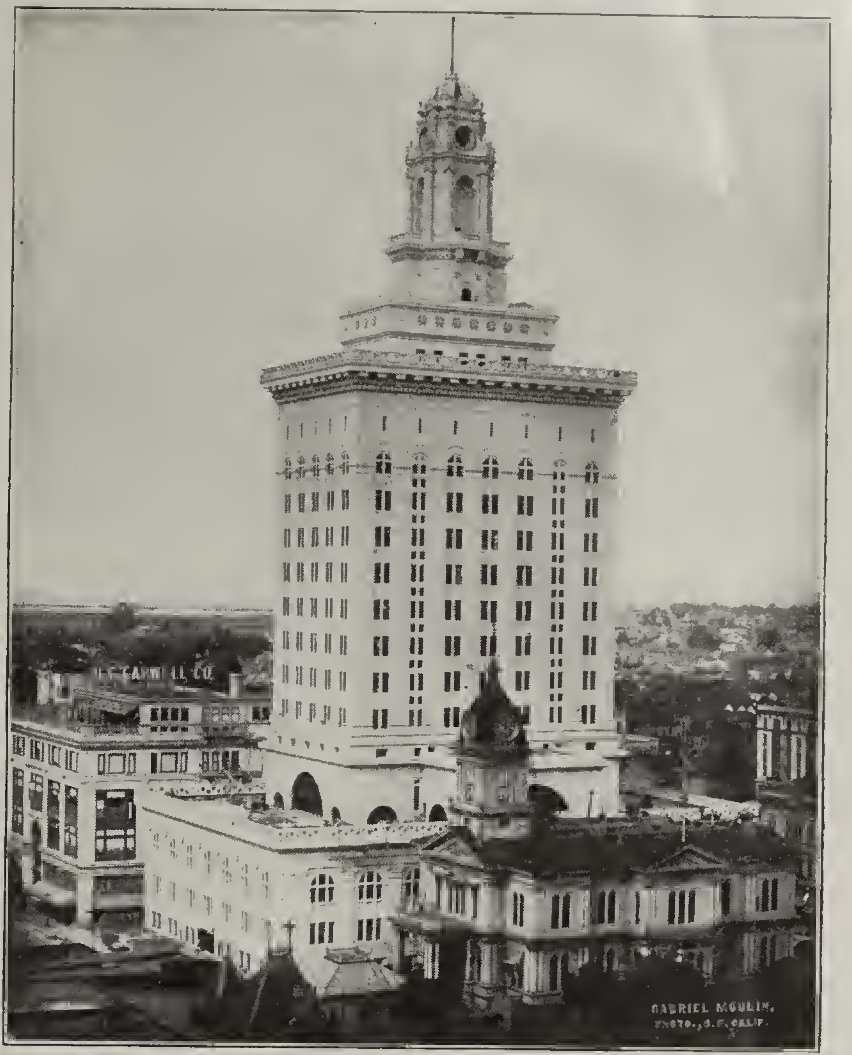
Pacific Coast Sewer Pipe News.

A lot of sewer work on the Pacific Coast has been held up by delay in disposing of bond issues, but several important projects are being planned. The San Gabriel Valley Inter-City Commission, representing a number of towns in the San Gabriel Valley, near Los Angeles, has had plans drawn for an outfall main trunk sewer to carry waste from these towns to the ocean, the estimated cost being about $3,000,000.

New City Hall at Oakland, Cal.

The new city hall of Oakland, Cal., work on which is now practically complete, stands as one of the great monumental structures of the Pacific Coast, and is remarkable not only for its size and conspicuous position, but for the rather unusual use of architectural terra cotta in conjunction with other materials in its contruction.

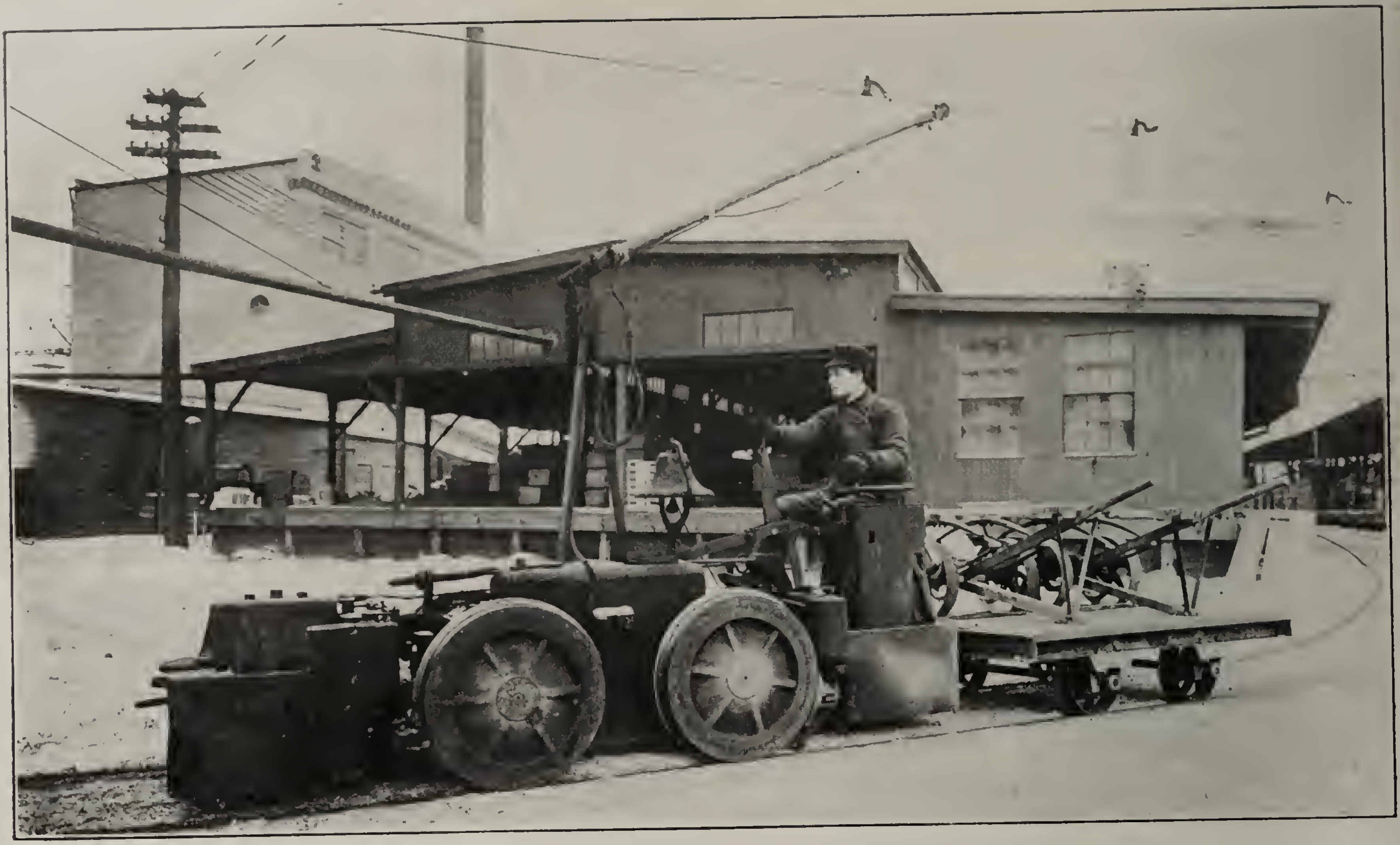
The building is located in the heart of the city, at Fourteenth and Washington streets, being now nearly surrounded by large department stores and business houses. It rises to a height of considerably over 300 ft., the massive 3-story base being surmounted by the central building, which rises to a height of 14 stories, capped by a tall and graceful tower, which considerably increases the entire height. Notwithstanding its location on low flat land at some distance from the bay, the building can easily be seen from a slight elevation in San Francisco, and on clear days is visible from vessels entering the harbor, being almost directly opposite the Golden Gate.



City Hall at Oakland, Cal. Palmer & Hornbostle, Architects. Terra Cotta by Gladding, McBean & Co.

While as in all buildings of this type various clay products enter into its construction to a considerable extent, the notable feature is the terra cotta used in the exterior. In the facing of the lower 14 stories, all plain flat surfaces are of California granite, while cream matt-glazed terra cotta is used for all decorative details, in capitals, cornice ornaments, and around the windows, the color and general appearance harmonizing finely with the stone. From the fourteenth story up, the entire superstructure is of cream matt-glazed terra cotta.

This building was designed by the architectural firm of Palmer & Hornbostel of New York, and the construction cost about $1,500,000. In planning the building, provision was made for the future growth of the city, and it is believed that it will afford ample accommodations for the municipal government for many years to come. The rapid growth of Oakland from a small town to a city is illustrated by comparing this magnificent structure with the old wooden city hall, now being torn down, which appears in the foreground in the picture.



Solving Cost of Yard Haulage

ONE CONCERN FINDS THE SOLUTION IN ELECTRIC LOCOMOTIVES AND AN ELABORATE TROLLEY SYSTEM OF HIGH POWER

By Warfield Webb

IN many of the larger manufacturing concerns inter-plant transportation is no small problem. The Northwestern Terra Cotta Co. finds the solution in electrical power and Mr. Webb tells how and why an elaborate system was installed which covers nearly two miles of track and includes five immense five-ton electric locomotives each hauling an average of fifteen cars.

ONE of the big considerations in the operation of manufacturing plants is that of time. To do as much work in a given period, and to do it with as little cost, makes the operation a distinctly economical factor. Where the plant covers several acres, as does the plant operated by the Northwestern Terra Cotta Co., in Chicago, the problem of rapidly transporting of the product through its various stages, and of the removal of all other commodities, becomes a vital one.

Time in this case is an asset that cannot be lost sight of, and the quickest means of attaining the end must be met in an intelligent manner. In the old days, when the plant was much smaller than it is now, there was a number of cars operated by hand power, or pushed along the track over the yards. Naturally these were slow of operation, with only a minimum of capacity. There was little, comparatively, accomplished with the system in vogue then.

Soon it became apparent that some more modern and efficient means of transportation would be demanded. The element of time was looming up more and more each week, and the company found that it would be compulsory to install some method of haulage that would be a real money and time saver. An inspection of the methods known were made, and the conclusion was reached that the only satisfactory plan was the installation of an electric line.

This was done, with the result that there was an enormous reduction in the operation of this portion of the plant. It necessitated the laying of more than a mile and a half of track throughout the yards of the works, and the placing of trolley wires, much the same as used by street railways. Five 5-ton, 15 h. p. Goodman motors were purchased, and are operated on direct current.

The trains, sometimes consisting of as many as fifteen cars, carrying a load of twenty tons, are operated with ease, and it only demands the service of one man, and a small cost for power. Moulds, coal, plaster, clay and terra cotta are some of the commodities transported by this line of railway. In addition to the above items, there are also many other kinds of material carried and the trains are used for general utility purposes.

The cars used for handling and raw material are of the side-dump type manufactured by the Orenstein-Arthur Koppel Co., are 20 in number and have a capacity of one ton per car. Thirty cars of the flat type for transferring the finished product from the fitting rooms to storage and shipping sheds. In transferring the finished work it is loaded on hand trucks especially constructed for this purpose and these are, in turn, loaded onto the flat cars. In some cases these cars and trucks are transferred 1,000 feet. The material conveyed in this manner prevents a second handling.

The generator used is of 50 H. P. capacity, direct connected to motor. The current used is promoted by 440 volt, 60 cycle generators.

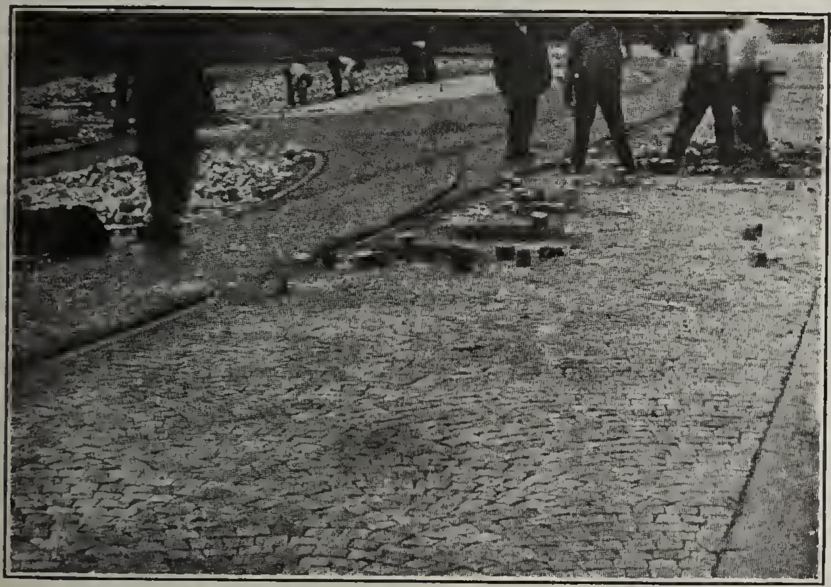
The saving to the company has been most noted, and the plan was an innovation that was found to be an ideal one, of solving the question of cost that is often confronting many manufacturers, and that is so readily solved by the electric train. It demands no feeding of fuel, and makes no dust or dirt, and is ever ready for instant operation. It has solved this large company's troubles, and offers a way out for the man who is perplexed as to where to lower his operating cost and still increase his working capacity.

CRITICIZES "DURAX" CLAIMS.

Secretary Blair says American Methods and Materials Outclass New Foreign Process.

A new idea in paving—or rather, a combination of several ideas, more or less new—is being tried out in the Brooklyn (N. Y.) Navy Yard. The pavement is called "Durax" and the section now being laid under government supervision is the first that has been put down in this country.

The fact that the United States authorities took sufficient interest in a special kind of paving material, or a special method of laying it, caused "Brick & Clay Record" to seek the opinion of an undoubted authority on paving methods and materials, and to lay his ideas before its readers.



In a letter dated July 3rd, Will P. Blair, Secretary of the National Paving Brick Mfrs.' Ass'n says:

"You have called my attention to the so-called 'Durax' pavement about to be laid in the Brooklyn Navy Yard.

"There are certain features of this pavement which commend it to respectful consideration. There are certain other features, however, that are subject to criticism. The feature that is commendable is the fact that each stone is supposed to conform to a cube of small dimensions. That feature is all right and cannot be gainsaid. If granite of such cubes were used and constructed into a pavement following the 'No. 1 Directions for Laying Vitrified Brick Pavements' in detail then a good pavement would be secured and one that would be satisfactory and durable, in fact such pavements have been constructed and furnish proof worth while the consideration of every American city and they possess merit away and beyond that of the 'Durax' pavement.

"Walter H. Allen, in describing the 'Durax' pavement in "Municipal Journal' of June 19th says, 'In general, the irregularities of the stones are such as to prohibit close laying in straight courses.' Following this statement he proceeds to say that 'on this account the stones are laid in concentric segments of circles, advantage being taken of the arch stone shapes of the blocks to secure smaller joints.'

"One look at the photograph of the pavement laid in this manner discloses much larger joints than would be the case if they were laid at right angles with the line of the street. Of course, laying them in the way described possesses no advantage whatever and is mere waste of money.

"The smooth concrete foundation necessary for such a pavement is an important and fundamental requirement for almost any wearing surface and that feature of the pavement possesses unquestioned merit.

"The thin cushion of gravel or stone is utterly without merit and is the very opposite from the thing most desired. The far better practice would be a sand cushion uniformly two inches in depth.

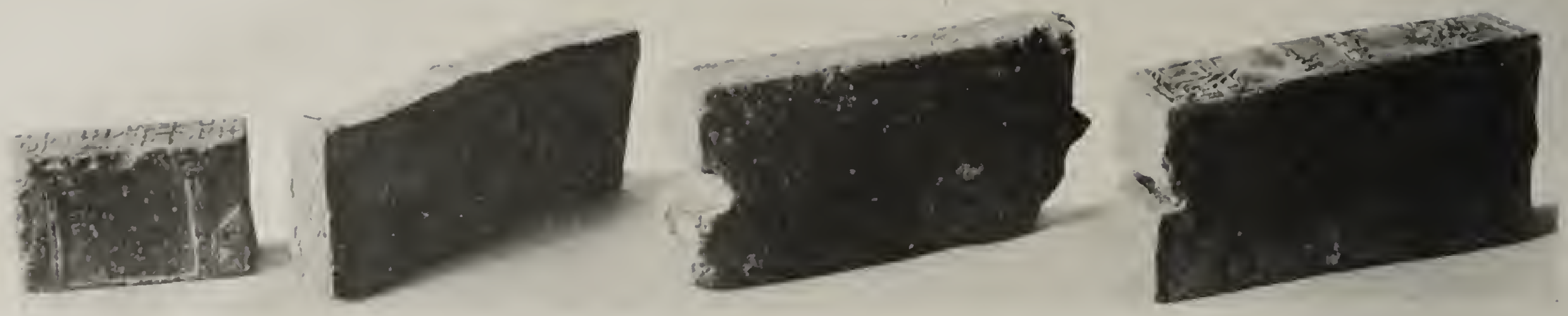
"The most indefensible feature of the construction is found in the requirement for a pitch grout which is supposed to penetrate the joints and form an underlying cushion so as to give a surface impermeable to water.

"No one in this country or any other country for that matter, is able to show any proof of the merit of such construction, not even a single square yard, five years in service that does not disclose a miserable condition of filth and a complete lack of sanitary conditions.

"If instead of this manner of constructing the so-called 'Durax' pavement these stones were laid upon a sand cushion which would afford an equilibrium of support and resilliency and then fill the joints with a one to one mixture of a first class quality of Portland cement and fine sand in proportion in place, then you have a pavement that grows smoother and smoother under wear yet does not become slippery, is always perfectly clean and perfectly sanitary at all times at the least possible cost.

"Such a pavement is to be found in the City of Cleveland at the southwest corner of the square, constructed by eliminating the objectionable manner and method to be followed in the case of the 'Durax' pavement and substituting the details herein recommended.

"This pavement was laid in 1901 and has grown better in use every day. There is a likelihood of its growing slightly better from year to year for a great number of years. It is not likely to call for repairs in a hundred years. This is not the only example to be found in this country fully demonstrating the value of proper methods of construction in brick and stone pavements that from the standpoint of economy are unanswerable. From the standpoint of satisfaction in use, no criticism is possible. From a sanitary standpoint, nothing better could be wished for, and yet almost every day there are cases where the eye peers through the mist and beyond the prize that is to be found at one's feet. It is not an uncommon fault in mankind. It is history repeating itself time and again. 'A prophet is not without honor save in his own country'; is the old, old story. Why should the Navy Yard or Naval authorities import an idea for the better ones to be found at home? Chasing a rainbow for the pot of gold may be exhilarating but in the end there is no reward."



Chinese Bricks Made in the First Century. The "lug" brick is dated A. D. 94.

Ancient Prototypes of Modern Brick

MADE IN THE DAWN OF THE CHRISTIAN ERA, THEY ARE ENRICHED WITH SYMBOLIC ORNAMENTS, DATES AND MESSAGES TO POSTERITY

By Samuel Howe

WITHIN the past ten years—surely no more than ten—brick buildings have been ornamented and their otherwise plain surfaces enriched by moulded headers, the moulds being as a rule, symbolical of the use to which the building is dedicated. The Madison Square Presbyterian Church and the Lotos Club in New York City both had this treatment, as had the Brooklyn (N. Y.) Academy of Music.

Coming through the haze of fifteen to nineteen centuries, inscriptions on the Chinese bricks here illustrated are of considerable interest and show us, as Chinese work has shown us many times in the past, that there is really nothing new.

The ancient Chinese craftsman has received his meed of praise for his work in bronze and in stone. A nation of painters, they enriched their brush work infinitely with quaint writings. They have defined a picture as a voiceless poem.

But they left very tangible evidence of their practical knowledge and force by their use of burned clay and evidenced a knowledge of its indestructibility by the inscriptions they placed upon it before it was fired.

I am indebted to Professor Laufer, of the Field Museum in Chicago, and to Professor Hirth, of Columbia University, New York City, for the translations of the dates and inscriptions.

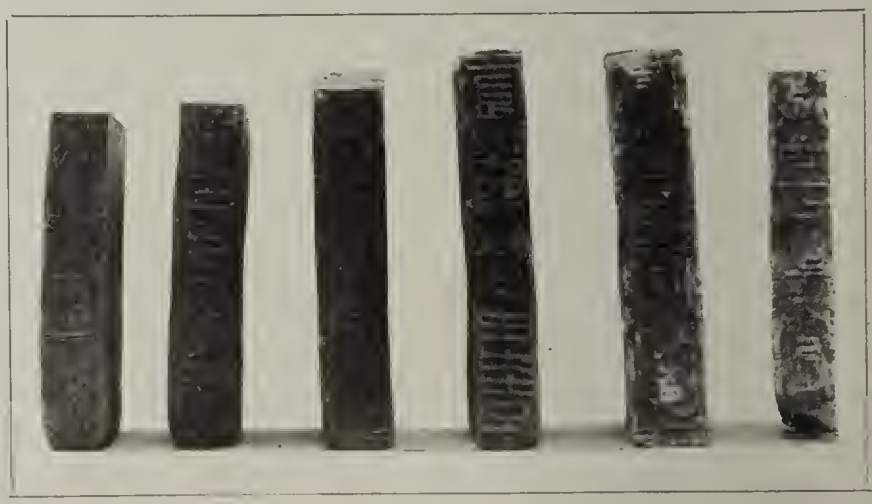
The bricks bear raised inscriptions and figures of men, animals and fishes, these being stamped or impressed upon the faces of some of the bricks and upon the beds and heads of others. Some of the bricks were evidently intended to be laid in horizontal courses, while others stood upright, as the inscriptions indicate.

In coloring the bricks are peculiar, having a sort of gray patina, like the bloom of the plum or grape, and, where this has been removed, the dark gray body underneath is exposed.

The bricks were evidently dried upon straw matting as the impression of the coarse fibred reed is very distinct. Here again is a modern thought—the impression of a textile pattern into the face of brick, accidental, perhaps in those early days, but being discovered today, in the "age of enlightenment."

Taken from ancient tombs, erected by a race that believed strongly in a life beyond the grave, these bricks, carrying messages of good wishes to succeeding generations of sons, show that these ancient brickmakers had learned the lesson modern brickmen of today are trying to teach—that "neither by frost, nor fire, nor flood, nor even time"—can well burned clay be destroyed or made to return to the dust from which it is fashioned.

Chinese Bricks Made in the First, Second and Third Centuries The largest measures 15 in. by 8 in. by 3¼ in. and weighs about twenty-five pounds.

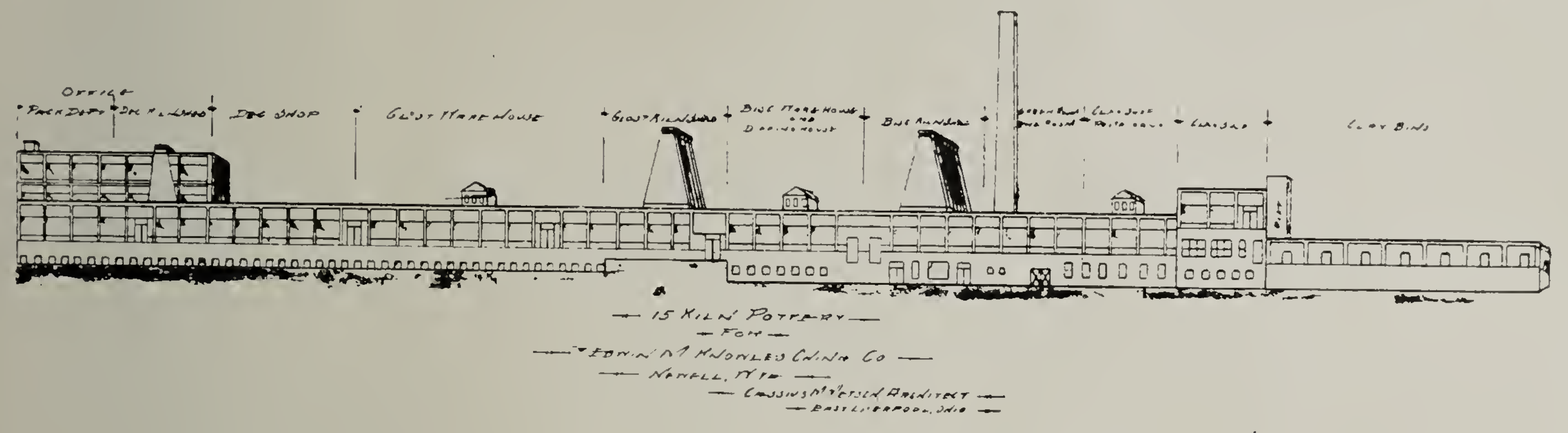


Smaller Bricks. The smallest measures 6½ in. by 3⅞ in. by 2½ in. It is inscribed "May It Serve to Our Sons and Grandsons."

Model Plant Construction for Potters

TWO RECENT EXAMPLES, REPRESENTING INVESTMENTS OF $1,000,000, DESCRIBED TO SHOW RAPID STRIDES IN THE INDUSTRY

By M. K. Zimerman



IN keeping with the purposes of "Brick and Clay Record" to chronicle the march of progress in the equipment and construction of clay plants, the following descriptive article on the "last word" in pottery plant construction will not be a miss.

In no other branch of the clay product industry has the stride of advancement been so great as among the pottery manufacturers, and the Laughlin and Knowles plants, representing investments of $1,000,000, are but two of the many recent cases that illustrate this fact.

THE very latest in pottery construction, from the standpoint of economic operation, rapid but thorough production and safeguarding employes' health—these and many other features are amply emphasized in the erection of the new Homer Laughlin China Co. and Edwin M. Knowles China Co. plants at Newell, W. Va., directly opposite East Liverpool, Ohio, the pottery center of the United States.

Summed up in tabloid form these improvements, now under way, mean the erection of two new potteries, one of 15 and the other 16 kilns. The estimated cost is nearly $1,000,000. Completed, these factories will require about 1,000 employes. Potters are scarce and where these workmen will come from is problematical as yet. It is likely many will have to be created from apprentices now at work. This will make a larger working force in the East Liverpool district, bringing a greater population, both for the pottery center proper, but also for Newell, originally promoted and developed by the Homer Laughlin interests.

Already the Homer Laughlin China Co. operates the largest pottery plant in the world. This is located at Newell, directly adjacent the new factory. It includes 30 kilns. In the East End, East Liverpool, this concern still maintains the original plant, which 16 years ago, started with only four kilns and now contains 32 kilns. The new plant complete, the Homer Laughlin interests will operate 77 kilns. In addition to the new plant of 16 kilns now under construction at Newell, the Edwin M. Knowles China Co. has a modern 12-kiln pottery at Chester, W. Va. This will be operated same as at present although it is likely the office headquarters will eventually be transferred to Newell.

Expediency and thoroughness in production of ware and modern sanitation are the keynotes in these new plants which are being constructed under the direct supervision of Fred B. Lawrence, general manager of the North American Manufacturing Co., parent concern of the Homer Laughlin China Co. Plans for all buildings have been prepared by Architect Cassius M. Metsch of East Liverpool, a rising young workman, actively engaged in pottery construction the last few years. The mechanical end of the E. M. Knowles plant is being looked after by Thomas B. Anderson, the general manager, and the Homer Laughlin China Co., by Joshua Poole, both recognized as among the leading experts in the country.

Here are some of the new features embodied in these latest of potteries:

> Absolutely continuous. Neither plant higher than two stories. Raw clay enters slip house at one end, passes through successive stages, 720 feet and emerges finished and ready for shipment.
>
> No steel posts or supports. Provides an entire clear floor space.

Separate heat pipes in stove rooms. Heretofore ware has been dried as a single unit. Under this new system crazing and danger of cracking will be reduced to a minimum as the clay will be afforded an equal temperature. A system of ventilation will provide a complete change of air six times an hour.

New arrangement in jiggershop. By this the clay is wheeled in on trucks in front of the jiggerman's bench instead of behind him as at present. This makes the jiggerman's work easier, as he will not have to turn his back to procure his clay. It also sets the windows of this department about eight feet away from the jigger, thus preventing their bespatterment by clay, giving clearer light and better sanitation.

Woman's rest room with lunch arrangements. Every possible convenience will be arranged for the women employes in these potteries.

Clay trucks will be run directly under the presses instead of at one side. Arrangement made so as to carry away water from under presses, keeping the surroundings entirely dry. Slip house presses elevated four feet above rest of the room.

Concrete and brick floors throughout. Entire structure skylighted.

Although the new Edwin M. Knowles plant will include one more kiln than the latest Homer Laughlin addition, these potteries will be practically identical. The Homer Laughlin factory will face the Ohio river, just east and parallel with the present 30-kiln plant. Just to the rear is the new Edwin M. Knowles industry. Each plant will be 720 feet long and 285 feet wide.

Clay bins are 16x32 feet, with enough space for 8 cars of the raw product. This is sufficient to provide material for the clay departments. In the slip house directly adjoining the floor beneath the clay presses is lifted four feet so as to be on a level with the clay cellar. Trucks for clay run directly beneath the presses. Heretofore the clay was lifted over the side and deposited in the trucks. Water from beneath the presses is drained in such a way as to leave an absolutely dry surface.

Level of the clay cellar floor is about 9 feet lower than the jiggershop, right above. An elevator runs from the clay cellar directly into the center of the jiggershop.

Jiggershop occupies a full width section of the plant, 285 feet in all. There is an 8 foot passage between the walls and clay shop elevator and the jigger benches. This is an entirely new innovation and provides for the transporting of clay in front of the jiggerman instead of behind him as is the present custom. This also keeps the windows from being splattered, gives more light and better sanitation.

From the jiggershop on, the major portion of the plants are two story. Above the jiggershop is the casting room, 85x285 feet. Here is also located the mould shop and pressing room. The same elevator transporting material from the clay cellar to the jiggershop, runs from the latter department to the casting room, mould and pressing shops. Concrete floors are a feature of both clay and jiggershops.

Stove rooms come next and are situated on the first floor, next the jiggershop. Instead of the usual 16 feet, they will encompass 20 feet. Each set of these stove rooms will be controlled by a separate set of steam pipes. Present pottery procedure calls for a single unit only. The new system will make it possible to determine and render different temperatures for the various rooms. This will aid in securing a general uniformity in the condition of the green ware. Room on the second floor above the green warehouse will be used as a women's rest room. There will be metal ventilated lockers, tables for luncheon purposes and adequate toilets. Both Homer Laughlin and Edwin M. Knowles companies believe that there is nothing too good for their employes and to this end will make every possible effort to secure their convenience, secure in the thought that such comfort makes only for better and more efficient service.

The bisque kiln shed will contain six kilns, 18 feet 2 inches, inside diameter. In succession follows the bisque warehouse and the dipping shed. In the latter department Joshua Poole, of the Homer Laughlin China Co. has devised a special contrivance which may and may not be installed. It is a rotary belt chain with which to take off the ware instead of by hand as at present. The belt is provided with shelves, rotating, of course. Upon these shelves the ware is placed after being dipped. By the time the circle is made the ware is practically dry.

Nine glost kilns are built in the glost kilnshed, immediately ahead of the dipping rooms. Each will be 16 feet 2 inches. In the glost warehouse, directly following, the floor raises 4 feet. From here we are conducted into the decorating shop, full width of the pottery. Floor plan then changes. The decorating kilnshed occupies a part of the next space, opening into the decorated ware room, a department of similar width. To one side and extending from the decorating shop to the end of the main building, is the packing shed. The decorating kilnshed will boast of five pair of 18 tile kilns.

In the basement and underneath the green house will be found the engine and boiler rooms. Sagger shop will be located directly beneath the bisque kiln shed. There will be no posts anywhere, as the roofs will be carried by steel trusses. This affords a larger area and will provide a special means of expedition as one department opens directly into another. With no obstruction in the shape of posts or pillars, the speed of production will be greatly facilitated.

The Homer Laughlin China Co. had its birth in 1871 when Homer and Shakespeare Laughlin built a two-kiln plant on the banks of the Ohio river. The first two years were times of stress and unremitting effort for the Laughlin brothers, yet the factory's trademark soon became known throughout the United States.

The Homer Laughlin China Co., is headed by the Aaron's interests of Pittsburgh, including Marcus and Charles Aarons, W. E. Wells, secretary-treasurer and George W. Clarke. This company also controls the street railway lines from East Liverpool to Newell, which shortly will be double tracked at an estimated cost of $75,000. A franchise to this effect has already been granted by the East Liverpool city council.

Edwin M. Knowles heads the Edwin M. Knowles China Co., which includes Thomas B. Anderson, treasurer and general manager.

Edwin M. Knowles is the son of the late Isaac Knowles, one of the original members of the Knowles, Taylor & Knowles interests. He is the principal owner of the Edwin M. Knowles China Co., Chester, W. Va., and the Potter's Supply Co., East Liverpool. Besides, for years he controlled a large block of stock in the Knowles, Taylor & Knowles plant and for some time was the head of that institution.

New Roofing Tile Plant in Arizona.

Joseph O. Conrad, formerly connected with the Alhambra Brick & Tile Company, has purchased machinery for the manufacture of Spanish mission roofing tile and has organized the Phoenix (Ariz.) Roof Tile Company.

How Cox Got Into the Game

BEING THE STORY OF A YOUNG MAN WHO FELL HEIR TO A RUN-DOWN CLAY PLANT

By Iverson C. Wells

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SYNOPSIS OF PRECEDING INSTALLMENTS.

A dilapidated clay plant in Ohio is left Albert Cox, a young insurance solicitor, by his grandfather. Cox visits Mauryville with the idea of selling the plant to some one. Selling is his profession and he argues that any one who learns the principles of salesmanship should be capable of selling anything. He finds, however, that the clay plant has not been run for years and that the clay supply is exhausted. The machinery is antiquated and Sawyer, the old foreman, tells him it is only good for junk. Cox considers cutting up the land into city lots, but the gaping holes in the clay pit soon convince him that his task is hopeless, and he is about to give up in despair when he meets Charlie Simpson, a student at the state school of ceramics, who is home for the summer vacation. Simpson, in exploring the neighboring hills, finds an excellent deposit of clay on one end of the Cox estate. Cox becomes interested in the young man's enthusiastic report and, despite Sawyer's despairing advice, plans to turn the discovery to practical use. He obtains an option on the adjoining property and offers to sell his holdings to Brown Bros., a prosperous firm of clayworkers in a nearby city, which is seeking a new location. The eagerness with which the Brown Bros. take up his offer suggests to Cox that young Simpson was right when he said the clay was of an unusual quality, and getting a sample brick made he slips into Cleveland to consult an architect. It is his intention to verify young Simpson's claims with the idea of establishing a value on the property. To his surprise the architect is very enthusiastic over the brick and offers to take 200,000 on a 60-day delivery. On the impulse Cox agrees to furnish the brick. A visit to other architects gives him tentative orders amounting to 1,000,000 brick. This decides Cox and he determines to go into the brick business. He starts out to rehabilitate the old plant with the assistance of Sawyer and young Simpson. After a visit to the Steinway Brick Machinery Co.'s plant at Pressville, Cox selects his equipment and for two weeks work is pushed night and day in the new plant. The severe strain soon tells on the men and Sawyer and young Simpson finally clash. Cox interests a Chicago dealer in his product and closes a big contract with him whereby he finds it necessary to plan for an enlargement of his plant. He makes arrangements with a machinery house to supply him with additional equipment when he needs it. Late one night Cox discovers his plant on fire and seeing a fleeing figure shoots. It develops that he has shot Sawyer. The old superintendent is seriously wounded and is in danger of losing his voice, but finally recovers under Cox's careful nursing and it develops he was wounded in his attempt to capture a discharged employe who sought revenge with the torch.

"His vocal cords were paralyzed," commented the doctor, "and I had expected that the paralysis would be permanent. It is evident that the injury to the throat was not as bad as we believed and with proper care and nursing he will eventually get back the full power of speech."

This was great news to me and I lost no time in conveying the information to Sawyer. We refused to let Sawyer test his voice again for several days, but as soon as his strength increased he was permitted to say a few words at a time.

During the first few days of happy convalescence I got an officer and visited the little hut that sheltered the Italian and his family. We found Carvillo sitting around the house nursing his broken arm and his face still in bandages.

We lost no time in accusing him of being Sawyer's midnight antagonist and the frightened look on his face convinced us that we were on the right track. Carvillo denied the charges at the start, but we pressed him and I assured him if he did not make a clean breast of the entire affair it would go hard with him. He admitted that he was guilty.

"My wife and babies were starving," he said. "You would not give me work. I was desperate. You had plenty. I had nothing. It made me mad. I don't know what I was doing. I got to drinking. You know the rest."

Carvillo's wife was a listener to the entire conversation and up until this time she had remained quietly by. Suddenly she fell down before me and begged me to spare her husband. I never was much of a hand to stand a woman's tears and I had assured her that no harm would come to him before I knew I had done so. In addition to that I had promised I would give him work as soon as he was able to do anything.

I motioned the sheriff and hurried from the hut before I obligated myself to take the fellow into partnership with me.

"You're an easy mark," said the sheriff as we walked away and there was a decided look of disgust on his face as he made this comment.

Matters were going along in great shape at the plant and the time was drawing near for us to open the first kiln. Henderson had begun to show some uneasiness about delivery and twice called me up over the phone. the kiln was sufficiently cool to permit drawing the brick.

"I expect to hold you absolutely to contract." he assured me one day. "If those brick are not on the job exactly on the day specified I'll cancel the order and take what I can get here. My word has been given to have this building completed by a certain time and I count my word of more value than anything else."

All hands stopped work as the head burner pulled out the first batch and as they struck the ground we crowded around. They were still too hot, of course, for us to tell much about them, but I had expected, because of my inexperience, that what we saw would be the product of the burning.

I was disappointed. Instead of the pretty golden yellow here was a pile of dirty looking brick that resembled the sample brick Simpson had burned about as much as a mud scow resembles an ocean liner. The head burner saw my disappointment. "Don't judge the brick by these," he told me. "They'll come out fine. Wait until you see these cooled off."

When the kiln hed cooled off sufficiently and the men began to draw the brick I was one of the most impatient of the little band that gathered around. Eagerly picking up the first few that were pulled out I examined them hurridly—almost feverishly. The next moment I was rushing to the little shed that did duty as an office and had Henderson on the phone at the other end in Cleveland.

"The 'Goldfields' are beauts!" I exclaimed. "We've just drawn the first kiln. The others will follow and you can rest contented that we will have your delivery on contract time."

I got busy at once and saw that the promised freight cars from the Ohio Valley were on the siding for me before night. We began to load the first car late that evening and I was jubilant.

While eating supper the telephone rang and I found young Simpson on the line.

"Have you read the evening papers?" he fairly shouted.

"If you haven't you had better do so right away. They are full of big strikes on the roads in the Central West and it looks like a nasty tieup."

The papers of that day were full of a general strike that was threatening the entire Middle West. I felt somewhat relieved when I ascertained that those roads listed as being effected by the tieup neither of the two trunklines that ran through Mauryville—the Ohio Valley and the Buckeye Central, were involved. I took precautions, however to telephone the local agent of both roads before I went to bed that night and ask them what they thought of the possibilities of a tieup on their lines.

"It looks bad all over the West," Carey of the Ohio Valley said, "but we have never had any trouble on the O. V. and we hay escape it this time."

Rowley of the Buckeye was not so sanguine.

I got out my contract with Henderson and found that one important clause had been omitted and that was the provisionns for strikes. I made mental reservation right then and there that I would be more particular the next time I made a contract. Inexperience must foot the bills, however, and realizing this I swallowed the pill and went to bed to spend a restless, sleepless night.

The next morning I was out bright and early. The morning papers told in glaring headlines of the spread of the strike, but I still had hope that the Ohio Valley and the Buckeye would hold out. Part of my hopes were dashed to the ground rather ruthlessly, however, for as I hurriedly scanned the columns of type I saw that the Ohio Valley was expected to walk out before noon.

We continued to load the cars nevertheless and, in the meantime kept in constant touch with both the local agents. It was about 10 o'clock that morning that a messenger brought me the news that the men on the Ohio Valley had joined the strikers and at midnight it was the plan for every train to be tied up.

I made arrangements at once to transfer what cars we had on the O. V. tracks to the Buckeye tracks and put on a double shift of men loading, expecting to work all night. We got two cars out over the Buckeye and started them on their way to Cleveland. If nothing happened these cars would get into Cleveland that night.

About 9 o'clock that evening I called up Rowley of the Buckeye Central and asked if he had heard from the local freight that left Mauryville that afternoon.

"Yes. it got into Cleveland on schedule time, but that will be the last train to run on the line until this strike is settled. Our men voted to go out today and the entire line will be tied up before midnight."

I hung up the telephone and sank in a chair. I saw my finish and what I thought about railroads, railroad men and railroad strikes would not look well in print.

* *

It was fully an hour later that a series of raps on the front door aroused me from my thoughts.

"It's me," cried Simpson from the outside.

I opened the door and let my youthful assistant in.

"What brings you here at this unearthly hour?" I asked wonderingly, holding the door open for him.

"You've heard about the Buckeye Central?" he stammered, unable to repress the excitement in his voice. I nodded my head. "I came over to tell you. Didn't know whether you knew. Saw the light in your window and knew you were still up—I—Good Lord, what are we going to do?"

Simpson looked up at me helplessly. I guess I reflected his feelings in my own troubled face, although I tried hard to smile.

"It's hell!" he exclaimed, dropping into a chair. There was a moment's silence between us. Simpson was the first to speak.

"What are you going to do?" he asked.

I shook my head and did not answer.

"You don't mean you are going to give up!" Simpson exclaimed and his face was astonishment personified.

"Why not?" I replied. "I've been sitting here for nearly two hours trying to figure out some scheme to get those brick into Cleveland, and there doesn't seem to be any way except by wagon or wheelbarrow."

"Of course that won't do, "interrupted Simpson.

"No, it would take a month of Sundays to carry all those brick by wagon into Cleveland."

Simpson was silent for a moment. Presently he looked up. There was a brightening gleam in his eye.

"Have you thought of the trolley over at Workville?"

"The trolley?"

"Why, yes. You see it is only four miles to the nearest point. We might use the wagons that far and—"

"It would take a month of Sundays!" I cried impatiently.

"We might get a couple of auto trucks from the Millson Bridge Company and—"

"Just the thing!" I exclaimed, springing to my feet. "With a couple of motor trucks we could rush those brick over to Workville in a jiffy and there reload them onto cars and beat the game yet."

The next moment I was calling up the night agent of the Inter City Interurban Traction Company at Workville and, finally, getting him over the telephone, I put the proposition up to him.

"We don't carry freight," he answered back. "Haven't got but two or three flat cars on the entire line and they are used for construction work."

I pleaded with him but to no avail and turned to Simpson with a heavy heart.

"That's luck isn't it?" I said as I resumed my seat. Simpson tried to console me, but I never heard a word he was saying. My mind was too busy on other matters just then.

"Simpson, how many motor trucks are there in this town?" I asked turning to him suddenly.

"I should judge three or four."

"Not enough," I replied, and before he could ask any questions I asked him to call a messenger boy and was writing out a telegram. Here is the message I sent:

Cleveland Motor Livery Service,
Cleveland, Ohio.
Want fifteen five-ton motor trucks to run between Cleveland and Mauryville for big contract. Start them on way early tomorrow. Leaving to close deal.

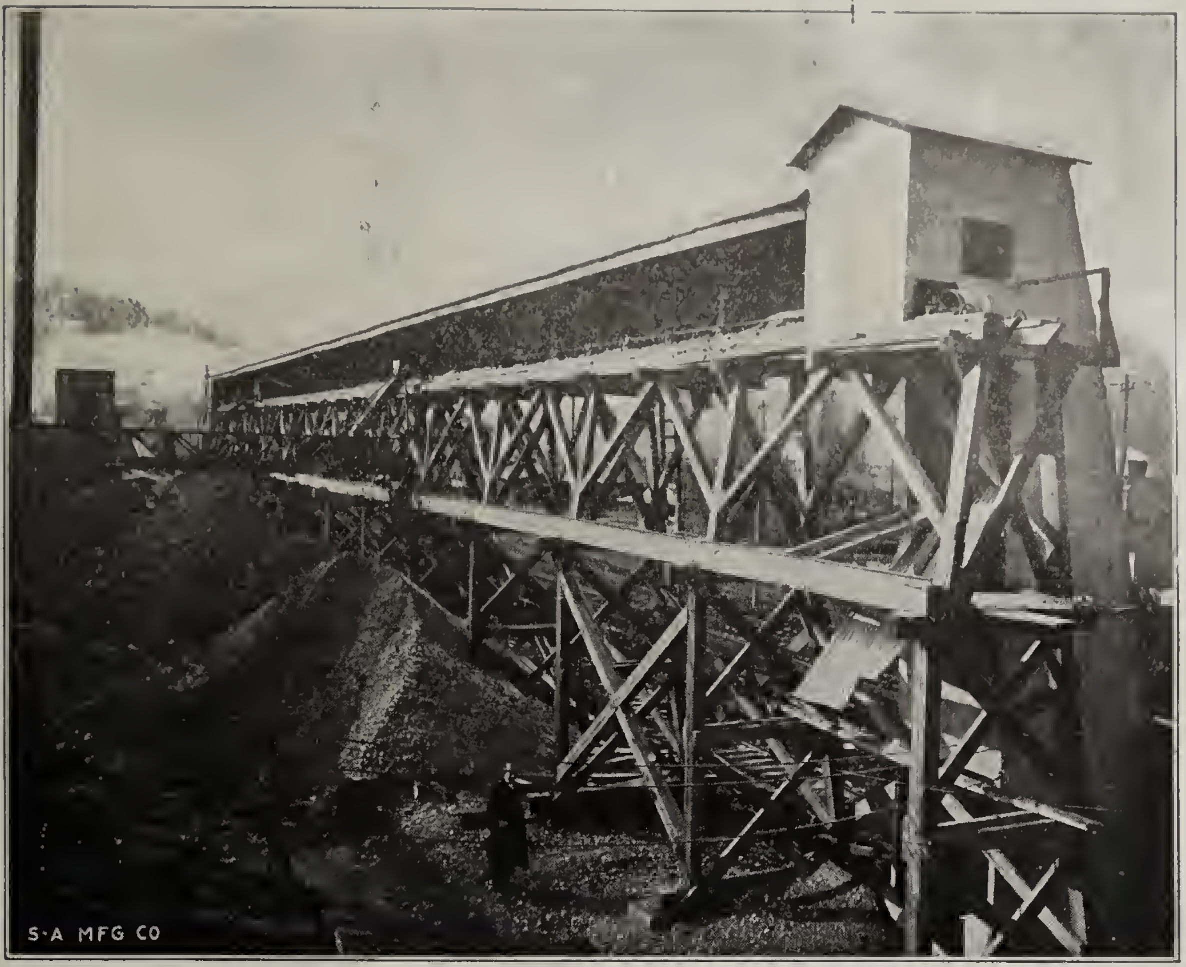
"Mr. Cox, that will cost a fortune!" exclaimed my youthful assistant when the messenger had departed and Simpson had received full import of my plans.

"Yes, and it will mean a fortune lost if I don't get those brick into Cleveland," I assured him.

I took an early morning start for Workville and there caught an interurban car for Cleveland. I lost no time in getting around to the offices of the Cleveland Motor Livery Service and found the manager had just arrived ahead of me but a few minutes. He was holding my telegram in his hand as I entered the office and was discussing it with an assistant.

As he turned toward me, the assistant said "We couldn't supply five trucks, let alone fifteen, in anything less than six weeks—what does the man think we're doing, stocking up on motor trucks to unload at bargain prices? He must be crazy with the heat!"

(The continuation of this story will be in the Aug. 15 issue.)



Belt Conveyors Distributing to Bridge Conveyor.

Stores Fire Clay Automatically

KENTUCKY CONCERN INTRODUCES MODERN METHOD OF GATHERING, CONVEYING AND HOUSING MATERIAL AND WITHDRAWING IT

THE South is showing rapid progress in all industrial lines and in no single industry have there been greater signs of activity than in the brick and tile business. Much of the advancement toward manufacturing efficiency is due to the southern clayworker, for he is taking the initiative.

The following description of an efficient automatic system in a Kentucky fire brick plant gives a pretty fair example of the industrial revolution that has seized the modern history makers of Dixie.

THE Ashland Fire Brick Co. of Ashland, Ky., has a very difficult clay to deal with which requires to be seasoned for several weeks before it can be worked suitably. The clay practically is as hard as limestone and is quarried in the same way, and it is only after considerable weathering that the lumps disintegrate or air-slack, becoming a plastic mass. On account of this fact, the company has provided an automatic storage system for piling several weeks' supply of the clay and another system for withdrawing from the pile to the plant as required.

The storage system consists essentially of a bucket elevator delivering into an elevated belt conveyor, which in turn delivers over a tripper to a flight conveyor carried on a traveling bridge. From this bridge the flight conveyor is thus enabled to deliver to any part of the storage pile. Clay is reclaimed after complete disintegration by means of belt conveyors operating in tunnels beneath the pile and delivering to the plant proper.

Clay is delivered from the quarry in hopper-bottom cars over standard-gauge track. The cars are dumped into a track hopper, from which the clay is delivered to a Western Jaw Crusher. The object of crushing the clay before storage is that it hastens the process of distintegration by exposing more surface to the atmosphere. The crusher discharges into an "S-A" Side Lapping Bucket Elevator, 51 feet between centers, which delivers above the distributing belt conveyor supported on the main trestle. This conveyor is 16 inches wide and 180 feet between centers. It is equipped with a tripper arranged to move with the traveling flight conveyor or to move separately as a hand-propelled tripper delivering directly to the pile. Both this conveyor and the elevator are driven at their head ends through individual motors.

The traveling bridge, carrying the distributing flight conveyor, is a steel truss with a cantilever extension at one end. This truss is carried on rollers resting on the elevated tracks and may be moved laterally under its own power to a position above any part of the storage pile. An extension of the truss frame also connects with the tripper of the belt conveyor so that the belt conveyor is obliged to discharge directly to the bridge conveyor. This is a steel flight conveyor, the clay being pushed along in a steel trough by the flights on the lower run and discharged through any one of several gates in the bottom of the trough. A single motor located within the frame drives the conveyor, and also through a suitable arrangement of gears and clutches the same motor may be made to propel the bridge in either direction.

The two reclaiming conveyors are each 180 feet between centers and 16 inches in width. These are located in tunnels beneath the storage room and so arranged that they can be loaded with clay through openings in the floor. These conveyors both deliver onto another 16-inch "S-A" Belt Conveyor, 24 feet between centers, extending at right angles to the first. This conveyor delivers in turn into a crusher-type elevator, 20 feet between centers, which delivers the clay to the dry pan.

This method of storing and reclaiming fire clay for curing has proved to be a very inexpensive process considering the amount of material handled and the effectiveness of the system. Material is stored and reclaimed without labor except for the direction and control of the machinery, both processes being carried on simultaneously or either one singly.

Rear View of Clay Storage System.

Travelling Bridge Carrying Distributing Flight Conveyor.

This system of conveyors was designed by the engineering department of the Stephens-Adamson Mfg. Co. to meet the special requirements of the situation and this company also manufactured and installed the complete system.

Many clayworking plants, now suffering from off-colors and irregular burns, "lime-pops" and other serious troubles, would do well to give careful consideration to the weathering of the clay. Dame Nature will work wonders if given a chance; using green clay is, at times, like eating green apples—the process of digestion is not altogether equal to the task.

THE POOR MAN'S BRICK IN MEXICO.

Crude but Valuable Art Provides Inexpensive Shelter for Mexico's Middle Class.

A crude but valuable art in Mexico is the making of adobe, sun-baked brick. If it were not for this crudely molded slab of sun-cured mud half the people of the Mexican republic would be shelterless. The rich and those of the middle class, who can afford it, build of stone. When the Spaniards came they denuded the forests to the extent that vast tracts were left treeless. Lumber is thus one of the rare commodities of Mexico.

The implements used by the Mexican mud-brickmaker are of the most primitive kind; earthen jars to hold the water needed in the mixing, a wooden mold in which the mud squares are shaped, and his own deft palms. Some Mexican builders make only the walls of their homes of the adobe, and thatch with straw, palm fronds or banana stalks. Others, again, form both walls and roof of the adobe. When this is the case the adobe roof is supported by beams. As will be readily supposed, the adobe is of enormous weight, and if it is not well supported it is likely to collapse upon its owner's head.

When covered by a thick coat of a sort of stucco, another production of Mexican art, the adobe walls stand for years without showing the least sign of crumbling. There are buildings in Mexico today, some of them public buildings, built of adobe, which were constructed fully a century ago.

Selling Brick

SALESMANSHIP AND ITS APPLICATION BY THE MANUFACTURER OF BURNED CLAY PRODUCTS

This is a series of heart-to-heart talks on one of the most important and most neglected departments in the successful conduct of a clay product plant. Mr. Wells also will review current advertising by clay plants, as publicity is one of the essentials of good salesmanship. Manufacturers are invited to submit copies of their advertising for critical review.

The Power of Analysis

Heart Talk No. 6

By Iverson C. Wells

THE SALESMAN who does not recognize the value or the power of ANALYSIS is MISSING the bullseye more times than he is HITTING it. He may have the requisite amount of determination to succeed, a pleasing address, enthusiasm, intelligent application and confidence in himself and his wares, but without the inclination to tear apart his subject, to trace things to their source and to resolve what knowledge he has to its original principles, he is neglecting to get the best out of himself.

The analytical mind is the mind that REASONS. It is not content with accepting some condition as a FACT without first PROVING to itself that it IS. It is not satisfied with a CAUSE without knowing WHY that cause exists.

Whatever you seek to sell be sure you have thoroughly analyzed your proposition before you make an "approach." Begin with the fundamentals. If brick is your product ask yourself the question, "Why brick?"

There must be a cause—a reason for brick.

The average man who reads the above will smile. He will look at his stock on the yard, at the towering buildings that have been erected around about him and, perhaps, even laugh.

But try it. Ask yourself. WHY brick are made, and then follow up the trend of reasoning.

It will surprise you to see what an entertaining line of thought this question will lead you into.

And the chances are that your reasoning will bring forth some selling arguments hitherto passed over.

There is every likelihood you will discover many features about your product you had entirely missed.

We are prone to say to ourselves: "Oh, I know all about brick—I know how and why they are made and why they should be used!"

But do you?

* * *

ANALYZE your field—analyze the conditions that exist in your territory. What are the possibilities? What material is being used? Who is supplying it? Why? Get at the bottom of those things—be super analytical.

Suppose you are living in a small city. If the community is a growing one there must be considerable home-building. What is the material used? Concrete? Frame? Why?

Surely you know that brick construction is better—that it is cheaper, figured on a business basis—that it is more durable—certainly you know all the good points about well-burned clay which is neither "By Frost, Nor Fire, Nor Flood, Nor Even Time" destroyed.

Have you properly placed these strong arguments before the public? Have you done anything to combat the misleading publicity of the cement manufacturers?

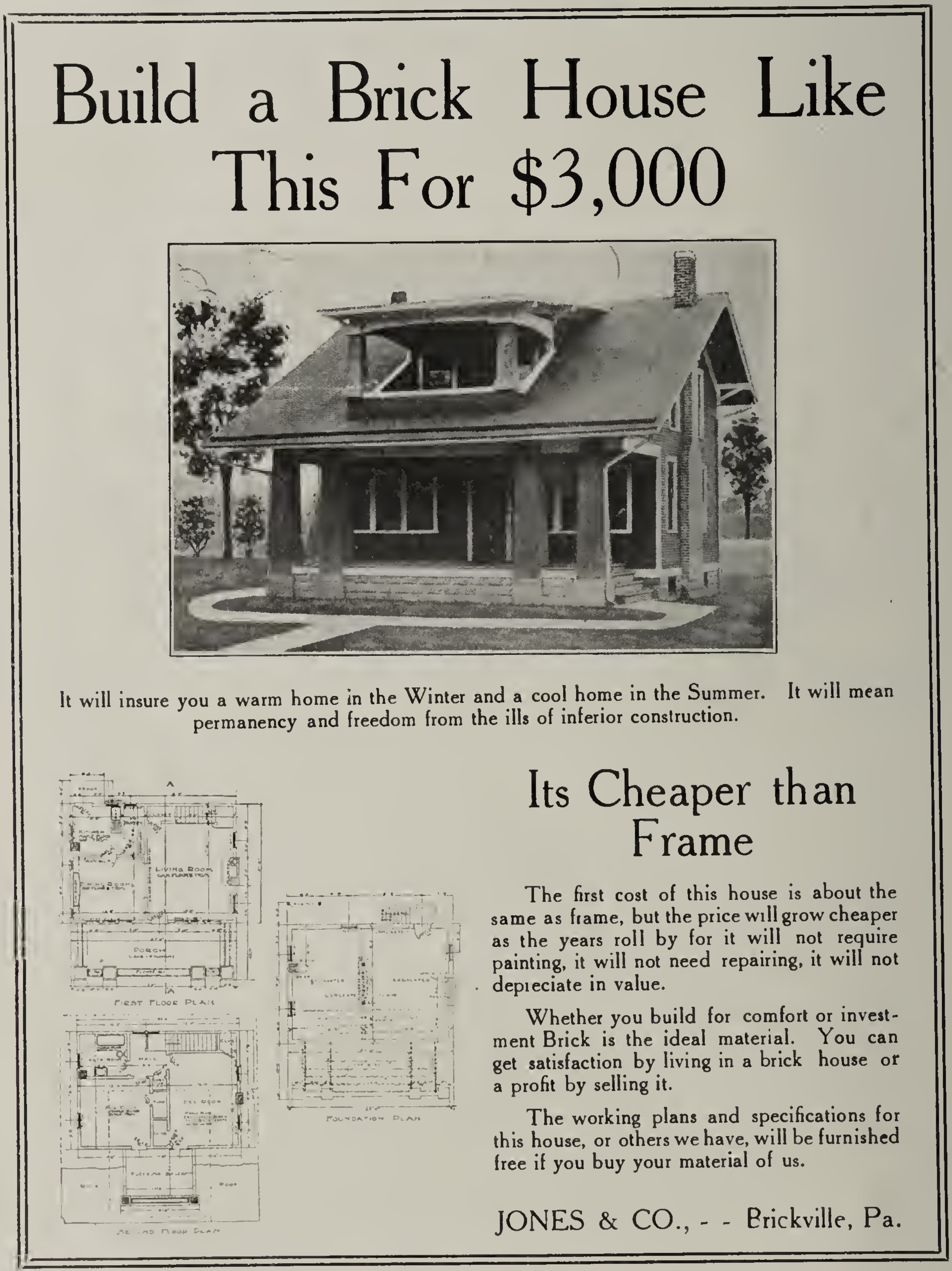
See how your reasoning LEADS you?

If there is little building in your city, why? You know that other communities are interested in home-building. Why? Have you tried a campaign of education? Have you used all your resources to teach the average family man the folly of PAYING rent when he can BUILD a home with his rent money?

Take up the thread of thought—work it out to a conclusion—then act.

IN lieu of the usual reproductions of advertising done by brickmakers in their local papers, which have found space in this department for several months, in connection with candid criticism or favorable comment, I have decided to make a slight departure beginning with this issue.

Many of my readers who show a willingness to go into local newspaper advertising find they have not the time or the inclination to prepare their own copy and have suggested that I show an occasional ad which, in my own estimation at least, meets with all the recognized requirements of the professional ad writer.



Build a Brick House Like This For $3,000

It will insure you a warm home in the Winter and a cool home in the Summer. It will mean permanency and freedom from the ills of inferior construction.

Its Cheaper than Frame

The first cost of this house is about the same as frame, but the price will grow cheaper as the years roll by for it will not require painting, it will not need repairing, it will not depreciate in value.

Whether you build for comfort or investment Brick is the ideal material. You can get satisfaction by living in a brick house or a profit by selling it.

The working plans and specifications for this house, or others we have, will be furnished free if you buy your material of us.

JONES & CO., - - Brickville, Pa.

In compliance with these requests I am showing an ad that was especially designed for the brickmaker in the smaller city who wishes to create a demand for his material.

The ad was written to occupy two columns of space, six inches deep, although it may occupy smaller space without detracting materially from its value, provided it is placed in a good position—that is, next to or surrounded by pure reading matter.

This ad, while not shown as an example of the blue-ribbon variety, is an excellent one and has the advantage of having been put to a practical test by a brickmaker who found it profitable.

To use copy like this, however, the advertiser must furnish prospective customers with floor plans and working specifications. There are books which contain similar illustrations, the publishers supplying plans and specifications at low prices, and the advertiser can draw on these for his "copy."

New Methods and Processes

A DEPARTMENT OF TECHNOLOGY
WHEREIN RECENT EXPERIMENTS
AND DISCOVERIES ARE EXPLOITED

Edited by
Charles S. Kinnison
Ceramic Chemist, United States Bureau of Standards, Department of Ceramics

Contributing Editors: Prof. Charles F. Binns, Ellis Lovejoy, C. E., Anton Vogt, C. E.

Imitation Granite Glaze for Terra Cotta

A cheap way of imitating granite has been one of the problems of the terra cotta industry. Ralph Heidingsfeld, an authority on glazes, in a paper read before the American Ceramic Society (Trans. A. C. S. Vol. XIV, 245-249) states that it was his idea to obtain a glaze which could be applied with one spray and which would contain the mottled effect so prevalent in granites. The fact that the black spots in the natural granite consist of biotite, hornblende and other ferro-magnesian minerals, suggested that these minerals could be mixed in a glaze and give the granite effect with one spray, thus eliminating the necessity of spattering the black spots on the surface of the glaze.

After numerous experiments, he found, however, that the best effect was obtained with specular iron ore. This gave a lustrous black spot, imparting to the glaze the spangled effect which one sees in a polished granite. This effect was seen best in glazes of the semi-matte texture. It also worked very effectively in glazes which were just a little too refractory for the temperature. The rough, shiny surface of these glazes looked exactly like semi-polished granite. To obtain a light brown imitation granite glaze, closely approximating Westerly, R. I., granite, the following body, engobe and glaze formula was used:

Body		Engobe	
½ Campbell's No. 33	70%	Crossley ball clay.....	15%
½ Edgar's No. 9....		English china No. 7 clay	20%
		Golding flint	20%
Fine grog	30%	Golding spar	45%

Glaze.

$$\left.\begin{array}{l}0.4\ K_2O\\0.2\ CaO\\0.4\ ZnO\end{array}\right\}0.56\ Al_2O_3\ 3.08\ SiO_2$$

Add to the glaze 2½ per cent of maurilite, which can be obtained in New Jersey by washing the sand found near South River, South Amboy, and Cape May. Finely ground biotite will give approximately the same result.

For a yellowish brown, small-speckled granite, imitating Westerly, R. I., granite, use the same body and engobe, with the following glaze:

$$\left.\begin{array}{l}0.1\ MgO\\0.2\ BaO\\0.4\ K_2O\\0.3\ CaO\end{array}\right\}0.56\ Al_2O_3\ 3.08\ SiO_2.\quad 2\tfrac{1}{2}\%\ \text{maurilite.}$$

For a light gray granite imitating Barre, Vt., granite, the same body and engobe, and the following glaze:

$$\left.\begin{array}{l}0.4\ K_2O\\0.2\ CaO\\0.4\ ZnO\end{array}\right\}0.56\ Al_2O_3\ 3.08\ SiO_2.\quad 2\tfrac{1}{2}\%\ \text{specular iron ore.}$$

To imitate a dark granite, highly polished, the same body and engobe, and the following glaze:

$$\left.\begin{array}{l}0.1\ MgO\\0.2\ BaO\\0.4\ K_2O\\0.3\ CaO\end{array}\right\}0.5\ Al_2O_3\ 3.5\ SiO_2.\quad 3\%\ \text{specular iron ore.}$$

For a semi-polished light granite, the same body and engobe, and the following glaze:

$$\left.\begin{array}{l}0.1\ MgO\\0.1\ BaO\\0.4\ K_2O\\0.4\ CaO\end{array}\right\}0.65\ Al_2O_3\ 5.85\ SiO_2.\quad 2\tfrac{1}{2}\%\ \text{specular iron ore.}$$

For a dull gray granite, no engobe, same body, and the following glaze:

$$\left.\begin{array}{llll}0.5 & K_2O & 2.5 & Al_2O_3\\0.5 & MgO & 0.05 & Fe_2O_3\end{array}\right\}9.86\ SiO_2.\quad 3\%\ \text{specular iron ore.}$$

Mr. Heidingsfeld stated that he obtained a brown spot with tourmaline, and a yellow to a dark brown with damourite. By mixing specular iron ore and damourite, a granite could be obtained with spots ranging from yellow to black. Thus, by the use of proper minerals any combination desired could be obtained.

The Grinding and Screening of Clays*

The purpose in grinding clays preliminary to manufacture by the plastic process is twofold: first, to break up any obnoxious minerals which occur in coarse size and to disseminate them through the mass; second, to create plasticity in clays in which that property lies dormant or undeveloped. In soft, plastic clays there is need only of crushing and disseminating mineral impurities, while in homogeneous shales the principal requirement is the development of plasticity.

Grinding is practised both wet and dry. Wet grinding is used where defective plasticity is found, as it is the best known method for developing latent plasticity; but at the same time the method is inefficient in securing physical homogeneity. Hence this treatment is usually applied to hard shales and fire clays.

In general, dry grinding is practised where the material is unhomogeneous naturally, and where its lack of homogeneity would cause trouble if not overcome. It is followed ordinarily by screening, which establishes the limit of size of the particles and insures uniformity. The dry screened clay is then converted to the plastic state by a subsequent process.

Thus it is seen that the wet and dry grinding processes are more than alternative routes to the same goal. The choice of treatment lies mainly in the judgment of the

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**Bulletin No. 11 Geographical Survey of Ohio.*

operator. The wet treatment is slower, more costly, and has less control of the homogeneity of the product, but produces far the best plasticity. In general any clay can be treated by this method but it is uncommon to use save where necessary for the reasons given. The dry treatment is faster, cheaper, produces a more homogeneous paste, but of deficient plasticity. It can be used with clays of good or moderate plasticity, and wherever possible will be used for the reasons given.

The roll is one of the simplest and oldest forms of grinding machines. Essentially it consists of two cylinders or cones whose surfaces are in close contact or held closely parallel to each other. Their axes must be in the same plane, and in the case of cylindrical rolls are parallel, but in the conical rolls the axes are inclined to each other by an amount proportional to the taper of the cones. Rolls are designed for two different ends: first, as a wet grinding machine for crushing stony, plastic clays, and for rejecting the rocks or hard portions which are too large to fall within the angle of nip; second, as a dry grinding tool for pulverizing large quantities of nearly uniform size of grains. The commonest use of rolls in this way is as a tailings grinder to finish the grinding of small particles which are partly reduced, but not enough so as to pass the screens.

Differential rolls are used for grinding fine grained alluvial clay which is so plastic as to be difficult to grind in a strictly dry grinding machine like a dry pan. One roll is small and driven at a high speed, and the other is larger, driven at lower speed. They are set within a fraction of an inch of each other. The small roll, about 9 in. or 10 in. in diameter by 2 ft. long, runs at approximately 500 r. p. m., while the large roll, about 18 in. in diameter, makes but 150 r. p. m. The peripheral speed of these two rolls is quite different, so that when clay is fed into the machine it not only squeezes and crushes it, but also shreds and tears it apart as well. This machine is able to take clay either dry or wet and carry it through. As the clay falls from the rolls it is put through a pug mill and stored in aging bins.

The grinding of glacial clays presents a problem not found in alluvial clays and shales on account of the occurrence of boulders, gravel, sand, etc., which have been picked up by glacial action. Glacial clays are thus very heterogeneous in character, and their preparation offers a special problem. At one plant treating this kind of clay a pair of conical dry crushing rolls, smooth surface, set 1 in. apart, and running at 75 r. p. m., handles about nine tons per hour. In size they are 2 ft. long by 12 in. at the large end and 7 in. at the small. These rolls crush the lumps of clay and smaller pebbles; and any stones that are too large for the angle of nip gradually work their way to the large end of the cones, where they fall out into a wheelbarrow and are removed. The use of these rolls is chiefly for their qualities as stone separators, but the next step in the process would hardly be successful if the clay had not first been crushed and shredded.

No other tool wholly takes the place of the dry grinding pan as a rough-and-ready grinder, in which the material comes to it in widely varying sizes, degrees of hardness, degrees of plasticity and in rates of feeding. Irregularities in all these points may occur in any works and on every dry pan. No machine that cannot give a good account of itself under such conditions will ever displace the dry pan as a claygrinder's main reliance. The step bearing which carries the weight of the vertical shaft is one of the most essential features about a dry pan. Usually a load of five to ten tons is carried on a bearing not as a rule exceeding 5 in. in diameter. This bearing tends to heat very easily, and unless proper oiling facilities are provided it will be very short-lived. The principal thing is to secure positive and copious lubrication. Nearly any step, if of adequate size, will stand well if kept thoroughly lubricated and clean.

Disintegrators are not as common in clay working plants as they are in other branches of industry, such as coal and cement. They usually consist of a horizontal shaft to which are keyed a series of discs, through the circumference of which bars are run, and on the latter are hung swinging hammers, which, by centrifugal force, fly straight outward on a line from the centre of the shaft when the machine is rotated at high speed. The hammers strike a very powerful blow, but not being rigidly fixed are free to move backward when they encounter a body heavy enough to overcome the centrifugal force. Clay being subjected to such severe treatment as this completely broken up before leaving the machine. It is found advisable to bring the clay to the disintegrator as dry as possible, and even then provision is made to steam-heat the jacket of the mill in order to prevent the clay from packing in it.

After a clay has been through a pan or equivalent, and is in the form of a coarsely granulated powder, the screening still remains difficult if the moisture exceeds five or six per cent. Caking on the screen, covering the holes, agglomerating and rolling on the surface without passing through, sticking in elevator cups, choking spouts and run ways are troubles incident to dry clay screening, the purpose of which is to set a limit on the maximum size of particles. As the coarsest particles in a ground mixture also are likely to be the hardest, and also of different chemical composition from the matrix of fine aluminous material, it follows that these coarse particles are both difficult to grind finer and are the most injurious to the clay if not re-ground and made to blend well into the matrix. Screening is therefore necessary to establish a limit beyond which particles cannot enter the clay body except by accident. It is a very necessary part of the process of homogenization, of which grinding and tempering are the two principal steps.

A recent form of inclined screen is made of heavy steel piano wires, strung on a strong substantial iron frame about 30 in. wide by 6 ft. long. The wires are drawn to a high tension and provision is, or should be, made to prevent slipping. At each end of the frame the wires are drawn over a rod threaded to suit the space required between the wires. By varying the pitch of these threads the mesh can be changed. The constant rigidity of the wires is an important requirement in order to insure regularity of the product. When properly constructed and kept in condition this screen has large capacity, does not bind easily, requires no power and little head room.

A centrifugal screen is in use at a plant in Alfred, New York. It consists of a large funnel-shaped receptacle, 4 ft. high, with a diameter of 9 ft. at its upper or large end. The screen is supported on a central shaft with spiders and suitable bearings at top and bottom, and revolves with the shaft. Clay is fed into the centre of the rapidly revolving cage, and upon striking the bottom of the cone begins to move up the sloping sides of the cone by centrifugal force. The fine clay passes through the perforations, while the coarse material is carried up and over the top, whence it is returned to the rolls for regrinding.

Questions and Answers

A DEPARTMENT FOR THE SOLUTION OF THE KNOTTY PROBLEMS CONFRONTING THE CLAY WORKER

This department was inaugurated to be of material benefit to the readers of "Brick and Clay Record" and no charge is made for the service given. The advice of the world's recognized authorities in ceramics is offered to clayworkers who are invited to avail themselves of the opportunity to have their problems solved here. Should a reply be desired by letter enclose a stamped and addressed envelope for reply.

What Are "Promenade" Tile?

168. *Pennsylvania—Why are certain flooring-tiles called "Promenade"—is it a trade-marked name?*

It is a trade name, but not a trade-marked name. It is used in this country to describe English Quarry Tile and is practically the same, both being made by the stiff-mud process. The foreign tile are, however, repressed, while those made in this country are not, as a general rule. It is well to bear in mind, however, that so-called "Promenade" tile are used for both flooring and roofing *and, under the freight classification of certain railroads, one takes a higher rate than the other and must be packed differently, even though the material is identically the same.* In this case, the use to which the tiles are to be put has a bearing on the freight rate.

The name "Promenade" is applied to sizes ranging from 3 in. by 3 in. to 12 in. by 12 in. surface area and from ¾ in. to 2 in. in thickness. They are generally square, with the exception of the 6 in. by 9 in. size, which is, of course, oblong. The under side of these tiles is generally corrugated and the common color is red, although chocolate, black, buffs and grays are made. Flashed effects in deep reds, through olives to burnt umber, are also obtained by using certain shales and muffling the fires.

"Brick and Clay Record" has been given to understand that trade-mark registration has been given on the word "Promenade" as applied to brick, the name being impressed on one bed of a brick, the other bed of which is made smooth by repressing, and given beveled edges. This is practically a tile 4 in. by 8 in. by approximately 2¼ in. thick and it is doubtful if the registration would be of any great value if tested in court, for the reason given—namely, that this "brick" is, in reality, a thick tile, and is intended for use as a tile. The granting of registration on this word is one of the many inconsistencies that beset acceptance or refusal in patent office procedure.

Wants Tallying Device for Wheelers.

150. *Ohio.—We load brick on cars by wheelbarrow-loads and tally each load on paper, each wheeler marking as he unloads. We need some mechanical device in the run-way that will register as the load goes in. Can you inform us where we can procure a device of this kind?*

Who can help this correspondent?

To Make New Tiles Look Old.

169. *Kentucky—Can you give us a process that will produce an effect of age on a newly burned, red roofing-tile?*

Roofing-tiles were formerly made by hand, from soft clay, and burned at a very low temperature. This made them much more soft and porous than those made by modern methods, and their surfaces collected dust and gave vegetation a lodging place—hence the soft hues and blending colors. While it would be impractical to make tiles by the old process profitably, it is possible to give those made with a more dense body and fired at a higher temperature, approximately the same surface as the old, hand-made tiles, either by applying a coating of clay to the green tile (applying a solution of dilute clay of the same consistency as pea-soup) by hand, using a stiff brush or swab of waste, and tapping the dilute clay sufficiently to make it adhere, or by dipping the tile in the dilute clay, or by pouring the dilute clay over it. The two methods last described will be successful only if the nature of the solution is such as to make it adhere without tapping. This is sometimes aided by having the solution hot, in which case the heat counteracts the oil that remains on the surface of the green tile.

Another method is to sprinkle "grog" or ground, burnt clay, on the surface of the green tile, tapping it in lightly with a stiff brush. In this case, however, the color of the "grog" may be too light—that is, lighter than the body of the tile—and this may be overcome by the admixture of chromium oxide or some other crude color that may be obtained from dealers in stains for potters. An accurate account of the amount used should be made during the progress of the experiments and the percentage of color to the total quantity of treated "grog" recorded. With this, and a record of the amount of the mixture necessary to properly color a given number of tiles, plus the cost of the labor required to apply it, will determine whether the process is commercially practicable.

Height of Skyscrapers.

160. *South Carolina—How high must a building be to be properly classed as a "skyscraper?"*

It depends upon "the company it keeps." In some cities, where the average building is from three to four stories, a ten-story structure would rightfully be regarded as in the skyscraper class. In New York City, where the path of the coming aviator is being pre-empted by the Metropolitan Tower and the Woolworth Building, the following statistics have been prepared by the Superintendent of Buildings in the Borough of Manhattan.

Stories.	Buildings.	Stories.	Buildings.
10	179	23	3
11	181	24	4
12	191	26	4
13	389	27	2
14	44	31	1
15	27	32	1
16	28	33	3
17	31	38	3
18	13	41	1
19	13	45	1
20	12	55	1
21	15		
22	11	Total	1,156

From this table it appears the average height of Manhattan skyscrapers (assuming anything 10 stories or more in height to be a skyscraper) is 13 stories.

Counters on Brick Machines.

We are indebted to Otto Pommer, of Quebec, Can., who answers the question published May 15, as No. 117—New Jersey. He says: "To count the brick made on the machine I would suggest to place a roller with the same periphery as the width of a brick behind the cutter, then connect the roller with a small counting apparatus, like those which are used on motorcycles to count the milage. Each turn of the roller will show one brick made. But in this way all spoiled bricks going over the hack belt are counted too. Another arrangement would be an electric contact placed under a rail where the full cars pass over. The German firm: Seger & Cramer, Berlin (Germany) N. W. 21, is selling an apparatus like this for about $27, or when fitted with a far distant alarm the price will be $45. Write to the firm and they will make an offer."

What Are "B. T. U.'s"?

165. *Virginia—I have noticed, in several coal advertisements, the initials "B. T. U."—what do they mean?*

B. T. U. is the contraction of "British Thermal Unit". It represents the quantity of heat absorbed by one pound of water, when the temperature is raised one degree Fahrenheit.

Who Makes the Helm Press?

163. *Havana—Can you tell us who makes the Helm Press? Please also tell us who makes a machine that will make fuel briquettes from pulverized charcoal, coke or soft coal.*

Will "Brick & Clay Record" readers answer the above inquiries?

Registered Trademarks on Brick.

170. *Missouri—In your serial story "How Cox Got Into the Game," I notice that Mr. Wells has used the names "Goldfield," "Gold-tex" and "Goldvertex" and states that Cox registered these as trade-names. I have been told by my lawyer that geographical and descriptive names were not accepted by the U. S. Patent Office.*

Mr. Wells purposely used a word that was practically barred by Patent Office rules, in order that he might avoid using some name that might have been registered and so have brought down upon his head the wrath of the man who owned the name (who would have claimed that he should have been consulted) and of others, who would claim Mr. Wells showed favoritism in giving free advertising to some ones' else product. You are wrong, however, in thinking that geographical names are barred; if you can prove that you have used the name of a town *exclusively* for ten consecutive years immediately preceding the date of your application, the Patent Office will give you registration on that name and so protect you in its subsequent use.

Regarding descriptive words, the rule is very elastic; contrary to popular belief, misspelling a word does not insure its registration—"Ruf-fase" would be refused registration as quickly as "Rough-face"—but, probably on the claim that the word "texture" does not apply to the brick, *but to the brickwork it produces,* the various "Tex's"—"Textur," "Ruftex," "Hy-tex" and "Dubltex"—have passed the censor and gained admission to the sacred precincts of Patent Office registration. A prominent attorney in Chicago has assured "Brick and Clay Record" that "gold-tex" and "gold-vertex" would have excellent chances of admission.

Wants Fireplace Plans and Designs.

162. *Michigan—Can you tell me where I can obtain a book containing brick fireplace and chimney designs, with estimates of the number of brick required?*

So far as "Brick & Clay Record" knows, no such book has ever been published, althugh information on single fireplace designs have been written up, from time to time, in various architectural magazines, and the articles should be indexed in the public libraries. Books of fireplaces have been issued by various concerns that sell brick mantels and fireplaces, but the books all give prices on the fireplaces shipped complete. For obvious reasons, no estimates are given of the number of bricks required for each mantel, as the selling price is not based entirely upon the number of brick, but rather on the expense of the designing the fireplace and the cost of making the working drawings that are a part of the shipment.

Finds Remedy for Brick Checking.

In the May 1 issue of "Brick & Clay Record" a correspondent asked for information relative to bricks checking before they were burned. An authority on dry-press brick machinery was consulted and his reply published; we are now in receipt of a letter from his correspondent, who writes us as follows:

"Some time ago I wrote you in regard to our brick checking, and you recommended that we examine the air holes on the press and see that we were not running too fast. All this we had previously done, so we did not gain very much information from your reply, which, by the way, I see the 'Canadian Clay Worker' for June has copied. However, we thank you for your reply, and would say that we overcame the difficulty in another way.

"We built wings to our shale trestle, to the right and left, 14 ft. high and 100 ft. long. While we were using up one side we filled up the other with shale, and also ran a ¾-inch stream of water on each day's mining for three hours. This water and the wind and sun has a wonderful effect on our shale in the two weeks we can allow it to weather. We also mix a little grog in the shape of brick bats, and the checking is entirely done away with.

"We are burning 80 per cent No. 1 face, 10 per cent No. 2 and 10 per cent common, at prices ranging from $9.50 per M. for comons to $15.00 and $40.00 per M. for face brick. Our shale is very rich, fat and plastic, and we manufacture 511,000 per month.

"Hoping this will help some fellow out of his troubles, as I lost some sleep over it the first month I was here, and thanking you again for your reply, I am

Yours very truly,

H. Hermes, Supt."

This letter indicates that this department, while it may not always be of real service to our correspondents, at least stands sufficiently high in their regard to induce them to use it to help other clayworkers out of difficulties that beset them. "Brick & Clay Record" is indebted to Mr. Hermes for the information he has given our readers in his interesting communication.

Water Has Salty Taste.

152. *Alberta—I find that the water here is very salty—nearly as bad as ocean water; our well is new, and it may get better after awhile, but do you think it would be safe to start making brick with this water? Ours is a soft-mud outfit.*

We advise our correspondent to send a specimen of the water to a chemist for analysis. Having obtained his report, it would be well to submit it to a ceramic expert, in order that he may judge whether the salty taste is due to chemicals that would affect the quality of the brick and if so, to suggest some way of counteracting them. This would be cheaper than to make up a kiln of brick that might prove an absolute failure.

Information Wanted.

The Cable-Loughman Company, of 1328 Broadway, New York, is interested in hollow tile partitions and would like to receive circulars and information on this subject from manufacturers of this class of material.

"Brick & Clay Record" would like to know name and address of the secretary of the American Society of Architects.

The Raton Cement Block & Brick Manufacturing Co., of Raton, New Mex., wants to know how it can eradicate small lime particles in the shale it burns for both building and paving brick.

The Superintendent

A DEPARTMENT CONDUCTED FOR THE INTERCHANGE OF IDEAS IN METHODS OF MANUFACTURE

Contributions from our readers are solicited for this department on any subject pertaining to the manufacturing end of the industry. Short cuts and labor-saving suggestions are particularly sought. Address all communications to the Editor of the Superintendent Department. Brick and Clay Record, Chicago.

In all pug-mills and clay mixing machines of the open-mixer type, a series of knives on a rotating shaft act in conjunction with a series of fixed knives or projections from the casing of the machine, says a writer in the "British Clayworker." These fixed knives or projections are the "counter knives," so termed because their action is opposed to that of the rotating blades. Some clayworkers have failed to appreciate their value, have thought that they merely increase the friction and the amount of power needed to drive the machine, and have reduced them to the smallest possible limits, or have even eliminated them altogether. This is quite a mistake, as the counter knives or their equivalent are equally as important to the satisfactory action of the rotary knives as are both blades in a pair of scissors to each other.

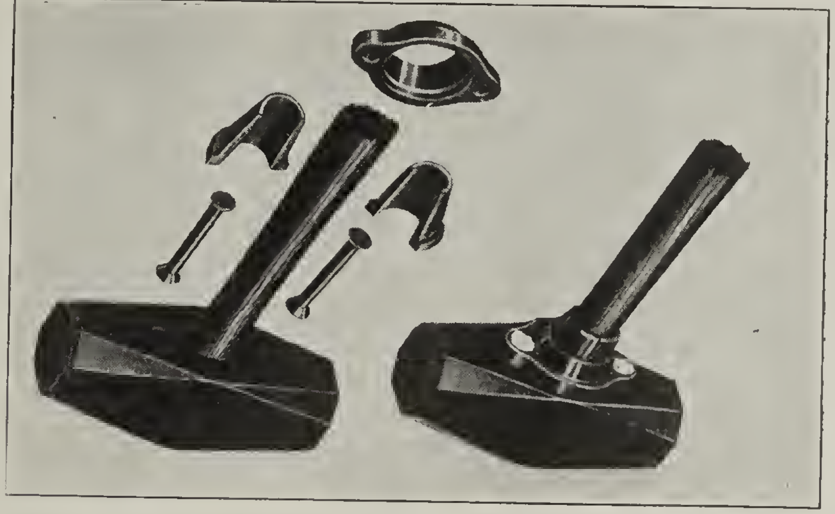
Unfortunately, very few clayworkers keep any accurate record of the power used by each machine on the works, so that it is difficult for them to realize how much power is wasted when the counter knives become worn. This was brought to our attention in a very striking manner recently. In a certain works it had been decided to run some of the machines electrically, and to keep a careful record of the output and the power used. Among other machines to be tested in this way was a new pug-mill, which had been installed as a preliminary to the drain-pipe machine. A motor was attached and a recording watt-meter was placed in circuit. At the end of a few months the amount of power needed was much greater than at first—so much so, in fact, that a new motor had to be employed for driving it. As time went on, the amount of power used per day increased steadily, and a serious effort was then made to locate its origin. It was eventually found that the clay was very sandy, and had a strong abrasive on the machinery, with the result that the knives rapidly wore away. The knives on the central shaft were entirely replaced by new ones, and the power consumption was reduced accordingly, though it did not become so low as when the machine was new. A further investigation showed that the wastage of power was due to the counter knives being so worn as to be almost useless, and on their replacement by a substitute (they had formed part of the original casting, and were therefore not renewable) the wastage was prevented. Such a state of affairs was clearly shown in this case, because it was easy to ascertain how much power was being used; with a machine driven by counter-shafting the wastage would have continued indefinitely, just as it does in hundreds of other yards at the present time.

In upright mixers, the counter knives sometimes consist of simple iron bars, but other forms are used by various engineers. In horizontal mixers, they usually take the form of a series of deep vertical grooves, in which the rotating knives move. Any form is suitable which will hold the clay effectively whilst it is being cut by the moving knives, but will let the same knives carry it forward when the cutting action is completed. In some old mixers and pug-mills, a series of 1-in. bolts screwed into the casing between the revolving knives, and projecting almost to the shaft carrying the latter, have proved highly successful. In fact, the term counter knife is somewhat of a misnomer, as the function of these articles is not to cut the clay, but to hold it in position for the moving blade to cut it.

The shape is of some influence, however, for if too sharp edged, it will cut the clay instead of holding it. This reduces the driving power required, and diminishes the mixing power of the machine.

INSURES AGAINST ACCIDENTS.

So many accidents are caused by the head of a sledge flying off and hitting the man holding the cold set, or someone standing nearby, that the illustration of a device which would render this impossible, should be of interest to those in charge of men in clayworking plants. The Willett Safety Clamp, a picture of which was furnished "Brick & Clay Record" by an official of the Illinois Steel Company, is as simple as it is effective. It is composed of a metal ring, slipped over two circular shaped metal wedges fitted to the sledge handle, close under the head of the sledge. Two rivets fasten the head to the sledge. To install the device on any sledge, it is only necessary to drill two holes through the head for the holding rivets, and to shape the handle to fit the two wedge-shaped pieces. The ring is then slipped over the end of the handle, over the wedge pieces, and fastened to the head of the sledge by rivets.


Willett Safety Clamp for Sledge Handles.

When this device is in place on a hammer it is impossible for the head to fly off. In case of the head coming loose, the more force exerted to pull it off the tighter the metal clamps hold on the handle.

Frequently a handle breaks just under the head or just inside the head of the sledge. The clamp is very effective under this condition, not only in preventing the head from flying off, but also in strengthening the weak point of the handle just under the head.

New Kaolin Deposits Discovered in Alabama

For several years, Dr. Eugene Smith, State Geologist, has claimed that Alabama has fine pottery clay and that some day the state would be a large producing centre of this material, and that, could capital be interested in the development of Alabama's clay lands, great areas of property, at present comparatively non-productive, would be changed to scenes of business activity, bristling with stacks and hazy with the smoke of kiln-fires.

The verification of his prophecies seems near at hand and before long, from present indications, New Jersey, Ohio and West Virginia will have a rival state in the manufacture of fine pottery. With open ports, the Panama Canal and the steadily rising tide of demand for all clay products in South American cities, Alabama's industries should flourish, a prosperous export market being added to the extensive home market, which takes in Texas and the Southwest, the Gulf states and Florida.

Recently some very valuable kaolin has been found in Marion county, the fineness and analysis of which prove it to be high grade in every way; in order, however, that practical tests might follow theoretical proofs of excellence, a large quantity of this clay was shipped to East Liverpool, Ohio, to be tried in the regular course of manufacturing various kinds of ware. Reports received up to this time have been of a highly satisfactory character.

The assay gives nearly fifty-eight per cent of alumina and about forty-three per cent of silica, with no iron or other detrimental elements. Efforts are being made to interest English capital in a railroad to the clay beds and for the erection of a large pottery either near the deposit or at some point on the Illinois Central railroad, which runs within six miles of the point where the clay will be mined.

Franklin county is apt to share in the development of fine beds of pottery clay as well, as a vast deposit has been found near Spruce Pine, in that county. A plant has already been started to utilize this clay and the intention is to make high grade pottery exclusively.

The Read-Nichols Company, of Bath, Me., expect to complete the manufacture of a kiln of brick this month, the output being about 500,000. The burning required more than 200 cords of wood and work began in June.

The Oregon State Board of Control has fixed the price of common building brick to be furnished by the penitentiary brick yard to the various State institutions at $7.50 per M. There are now about 400,000 brick at the yard, ready to be burned.

By filing a trust deed for $50,000 the Woodland (Ill.) Clay Company made the first move in the enlargement of its plant. The money thus raised will be used in the erection of two kilns, or a Haigh continuous, of large capacity.

After suffering severe losses by the Ohio River flood, the Carlisle Brick Co., at Portsmouth, O., recently was again afflicted with damage through a severe storm which swept that district. The loss to the company on this occasion has been estimated at several thousand dollars.

Announcement has just been made that a meeting of the stockholders of the Saxton Vitrified Brick Co. will be held at Saxton, Pa., August 21, for the purpose of considering a resolution authorizing the board of directors to increase the capital stock of the company $100,000.

Monthly Tablet

Ancient Order of Chaldeans

Issued Under Authority of
The Supreme Temple
Chicago

Officers of the Supreme Temple

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Supreme Learned Fo	WM. SCHLAKE
Supreme Exalted Philosopher	F. W. LUCKE
Supreme Keeper of Tablets	IVERSON C. WELLS
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(NOTE: Address all communications to Iverson C. Wells, Supreme Keeper of Tablets, 445 Plymouth Court, Chicago)

A meeting of the Supreme Council of High Priests and Officers of the Supreme Temple will be held at the Hotel Sherman, Chicago, Wednesday, August 20, 1913 at 8 p. m. Matters of importance will be taken up and plans laid for the Fall festivities.

Supreme Keeper of the Tablets Wells is enjoying a short rest at Gull Lake, Michigan. A glance at the Michigan map will show that this is about midway between Kalamazoo, the celery centre, and Battle Creek, where Postum and other brain foods are hewn out. With this environment, the "new ritual" should be well on its way before the August meeting.

Delayed by the close inspection and rigid requirements of the Officers of the Supreme Temple, the buttons with the sacred bull and the magic "F's" will be ready for delivery on or before August 15.

No casualties having been reported as a result of the words printed on the back of the membership cards, it is to be assumed that none of the members of the Ancient Order of Chaldeans have met with disablement during the hot spell.

Supreme Venerable Nebo Varney had his picture in the "Clayworker" last issue and a story about his life and works that must have pleased the author greatly.

No further inscriptions being decipherable, the tablet will go to the kiln as it is written.

Face Brick

Manufacturers of face-brick who depend upon the New York market for any large percentage of their sales, have learned that the metropolis is insistent upon one point, which is that every brick must have one good face and two good heads. This is due to the building code of that city, which regulates the thickness of "bearing walls"—that is, the walls upon which floor or roof beams rest—and does not count the four inches of face-brick as a part of the wall, unless it is tied in with full headers every sixth course. This means that two headers show to every five stretchers. In Flemish, English, Dutch or Garden Wall bonds, still more headers show to the number of stretchers, and, as a still greater number of face-brick are bonded in to the backing-up wall, the building code admits this work as a part of the bearing wall.

It is admitted that in this, there seems to be no reason for more than "one good head and one good face"—the old requirement in face-brick—but it must be borne in mind that the building inspector is not always at the point where face-brick are being laid. It is then only necessary to lay an "apparent header"—that is, a face-brick broken in half and the two halves laid as headers—to give the effect of tying in. When a brick has only one good head, or rather, only one head that matches the face, this deception, while possible, so far as the building department is concerned, has a tendency to give the brickwork a "spotty" appearance, and, as a consequence, face-brick that do not have "two heads that match the face" are very unpopular in New York. Brick that are burned on edge with heads exposed to the flame, or flat, with benches close together in the kiln, make all kinds of trouble for New York dealers and are not apt to have a ready sale along the Great White Way.

In spite of the fact that much has been written about "life in brickwork" and the beauty that lies in variation in shading, the fact remains that fairly even shading in rough-cut face-brick gives a tone to the resulting wall that is missing when a wide variation of color is used. There is, or should be, a point where careless sorting cannot claim artistic value and proper variation of shade given the reward of merit in repeat orders. Just as the proof of the pudding lies in the eating, so the proof of the real merit of "mingled shades" lies in the pleasing tone of the building, after the washing down is completed and the finished structure takes its place as one of the ornaments—or otherwise—of a neighborhood. There is no doubt as to the artistic merit of rough-cut face-brick, nor is there any question as to the desirability of a slight—sometimes a great—amount of variation in the shading, since lack of any variation would result in what might well be termed a cement-like wall, ruled off into brick sizes. But when the variation runs riot, and the finished wall tells a story of careless sorting, and a desire to work off off-shade brick, there is one sure result—an ever-increasing difficulty in securing another order for the same brick. And when manufacturers, taking advantage of the real desire for a better understanding of brick and a more artistic brick architecture, mask their desire to save money by giving what they know to be poor service, behind the plea "the more it varies, the better they like it," they, themselves, are helping to kill the goose that has laid many a golden egg for them, in the few years that have passed since rough-cut brick became justly popular.

The Farmers' Brick & Tile Company, of Bay View, Wash., has been sold, through a receiver, to the Little Falls Brick & Tile Company, which will make extensive improvements, spending at least $10,000 on new machinery, dryer, down draft kilns and other modern additions to the equipment. Experts have pronounced the clay deposit which the new company will work, to be good for high grade face brick.

The East Liverpool Brick Manufacturing Co., which is under the management of Harry Horwell, will discontinue the manufacture of red face-brick, and is burning a manganese gray. The demand for gray brick, especially in New York and New England, is so great that it is a hard matter for plants now running on manganese grays to keep up with the requirement.

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Page 251

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Common Brick

From reports received from Evansville, Ind., a common brick famine has been raging there for several weeks and the Chamber of Commerce is doing some strenuous work to secure the opening of at least one more plant in or near the city. Evansville is growing so fast that although the plants now located there are well equipped and have large capacities, they are unable to cope with the demand, and work that should be progressing rapidly at the present time, is being held up for lack of building brick. Many master brick masons are urging the establishment of another yard; they point out that the Standard company spent $40,000 in improving its plant last year and over $60,000 during 1913, and, although it is breaking all records in the amount of brick it is turning out, that common brick is still being shipped in from out-of-town points, at prices that include freight rates which are by no means low. They claim that the enormous increase in new buildings, many of which are being constructed entirely of brick, is exhausting the supply as fast as it is made and that the amount of orders on hand will keep Evansville brickmakers running at top speed until the winter sets in and stops bricklaying. In the meantime, new work that may come out in the late summer and fall will have to look elsewhere for its supply of backing-up brick or take its chances of being delayed for lack of material.

In order to make improvements that will cost in the neighborhood of $5,000, the San Angelo (Tex.) Brick Company closed down its plant July 1 and will not start until the early part of August. The company had 1,000,000 common brick on hand at that date, and figures on this being sufficient to supply the demand until operations can be resumed. The improvements include a new boiler and new machinery for the manufacture of stiff-mud shale builders. New storage sheds and five new kilns are also included. The new kilns will burn oil, coal or wood, according to whichever can be secured the most economically and conveniently at any given time.

Harry S. Ebert has been appointed receiver for Benjamin Kissinger's Sons, brick manufacturers, of York, Pa., who became voluntary bankrupts recently. No statement of assets and liabilities has been made. The firm is composed of John F. and Stuart H. Kissinger and has, for many years, been among York's most prominent industries. The plant has a capacity of more than 10,000,000 bricks a year. It is said that the financial difficulties involve the Kissingers as individuals and as a firm.

The directors of the Great West Coal & Brick Company of Estevan, Sask., have made arrangements for the installation of machinery for brickmaking at its plant one mile south of Estevan. The amount of the outlay is said to be $87,000. J. A. Kinney, of Kenora, Ont., is president of the company.

Starting with half the force formerly employed, the big plant of the Coffeyville Brick & Tile Company, of Corbin City, Kas., a point just south of Cherryvale, resumed operations July 15. Gas is being used for fuel and about 75 men are at work.

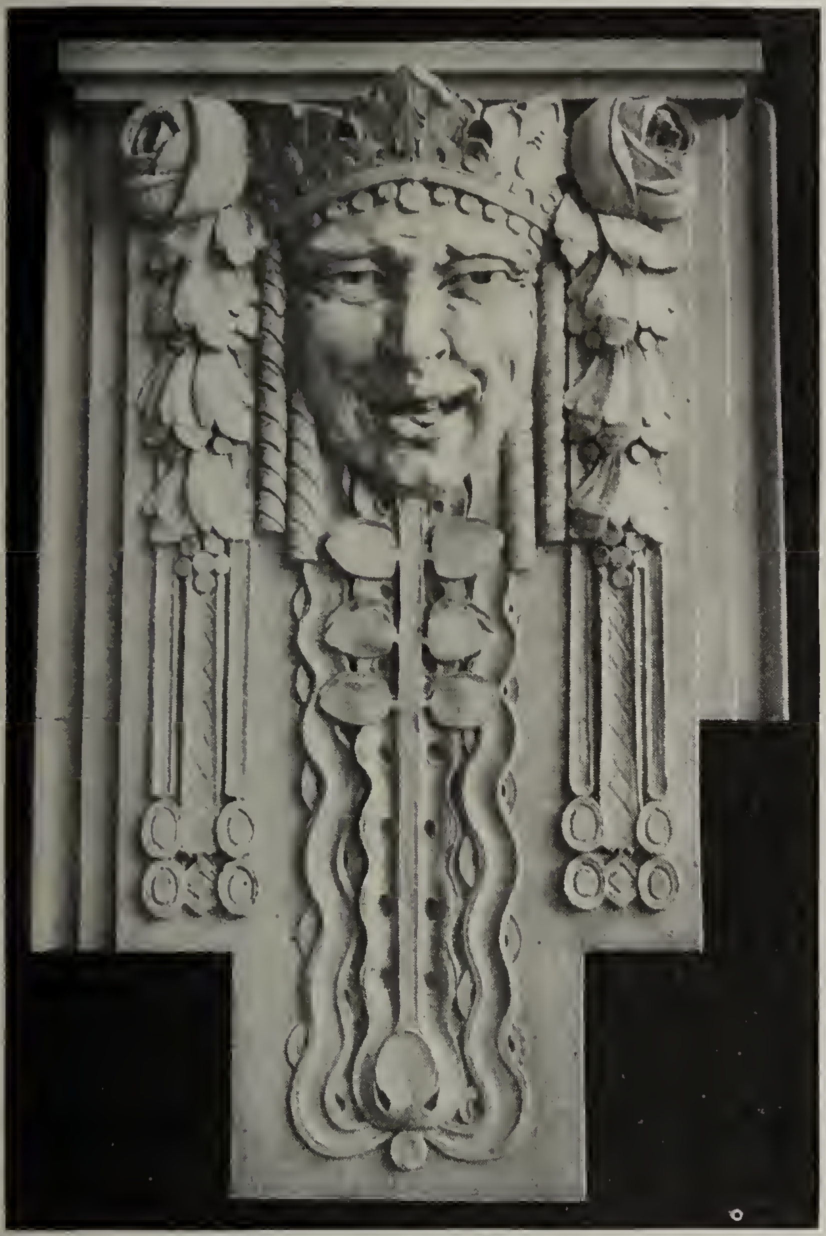
D. N. Collins and A. D. Grant have started a new brick plant on the former's property in Beaumont, Cal., a kiln of 100,000 brick now being under fire. Test brick were made and sent to Los Angeles, where they were tested and found to be of good quality.

Fire in the drying room of the Sharpsburg (Pa.) Brick Co.'s plant caused a loss of several thousand dollars. Firemen were on the job for three hours. Repairs started as soon as insurance was adjusted.

The capital stock of the Milton Brick Co., of Milton, Pa., has been increased from $50,000 to $75,000. A number of improvements are to be made to the property, so it is reported

Charles Beck, formerly manager of a newspaper plant located at Logan, O., has assumed the position of assistant superintendent of the Logan Brick Mfg. Co., at North Logan, O.

Architectural Terra Cotta



Pilaster Ornament, approximately 3 ft. 9 in. high, executed by the Northwestern Terra Cotta Co., for the C. F. Bishop Building, Chicago—Perry & Thomas, Architects.

In many cities—surely in Chicago—the public, which includes the architect and builder as well as the man in the street, has come to believe that smoke and soot are necessary evils. Whenever a smoke abatement ordinance is proposed, "interests" seem all-powerful and the lover of the "city beautiful" a weakling. Where, as in the East, it is to the interest of the manufacturer to use anthracite coal, the air is fairly free from soot—yet even in New York, where the ordinances are strict, one can see black plumes of half consumed bituminous coal seemingly going skyward, but actually settling on the city and its inhabitants. "One can see" is incorrect, just here—it should be written "everyone but one can see" and that one is, usually, the only official who has authority to trace that black plume to its lair and arrest, prosecute, fine and generally harass the man who buys the coal, the man who shovels it into the furnace and every other man responsible. Chicago, however, is changing her architecture and her architectural materials, to attain the right to use the name the world gave her in 1893—"The White City"—and with characteristic "I Will" she is ceasing to use dark colored brick in anticipation of the inevitable soot-like monotone to which the old buildings all came, sooner or later, and facing her skyscrapers with enameled, light colored terra-cotta, is rising, lily-like, from the murky, muddy color-scheme that once helped to make her architecture infamous.

No longer hoping for legal enactments to compel a clear atmosphere, she refuses to bend with the wind, but opposes it with what has aptly been called "the coming building material." White enameled terra-cotta—with a surface that can be washed, as you would wash a china plate—and make it as clean!

St. Louis Vitrified & Fire Brick Co.

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Fire Brick, Zinc Furnace Lining, Cupola Blocks, Locomotive Linings, Patent Lime Kiln Blocks

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THE HOME OF "MEDAL BLOCK" AND
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"Licensee of Dunn Wire-Cut-Lug Block. The *Best* and most suitable form of *Paving Block* for *Road Way Improvements* in use with the *Cement Grout Filler*"

The Danville Brick Company
Manufacturers of
The Unsurpassed
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LET US QUOTE YOU PRICES

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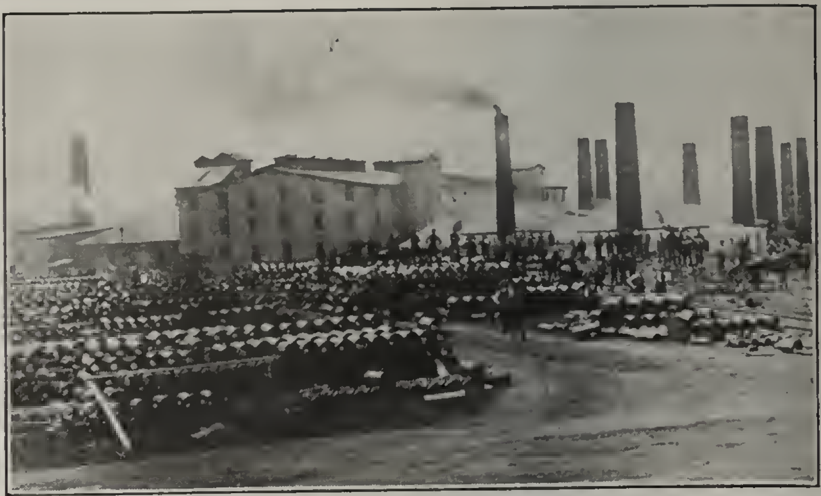
PAVING BRICK WORKS
SHAWMUT, PA. Alfred Yates, Gen. Mgr.
Vitrified Shale and Fire Clay
Paving Bricks and Blocks
Burned in Yates' Patent Kiln
SAMPLES AND PRICES ON APPLICATION

"Best Paving Block Made"

Daily Capacity 500,000
The Metropolitan Paving Brick Co.
Canton, Ohio

Sewer Pipe



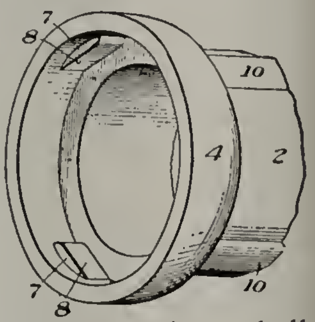
Above is shown the No. 2 plant of the Standard Clay Products Co., Ltd., of St. Johns, P. Q. This is located at New Glasgow, N. S., and is equipped with a 200-h.p. Corliss engine, two nine-foot dry pans, four eight-foot wet pans, three 16x6-foot steel boilers, two pipe presses and a very complete outfit of elevators and conveyors. Another plant is in course of erection, about 1,000 ft. distant from the No. 2 plant, which will have practically the same equipment as that scheduled above, together with fifteen 34-foot kilns. The elevators, trucks, etc., are being supplied by The Stevenson Company, of Wellsville, O. The double unit will constitute the largest sewer pipe factory in Canada.

At a meeting of the stockholders of the Dennison Sewer Pipe Co., held at Dennison, O., a dividend of ten per cent was recently declared, which shows the company to be in a most prosperous condition. Officers of the company are: President, Theodore Lanning; vice-president, M. Moody; secretary, Roy Lanning; treasurer, E. D. Moody; general manager, P. A. Romig. The old board of directors have been re-elected. Because of the business outlook, the company will build two additional kilns and otherwise increase its capacity by installing new machinery.

J. H. New, president of the Hamilton & Toronto Sewer Pipe Co., of Hamilton and Toronto, Canada, died Thursday, July 17th. Mr. New was a prominent figure in clayworking circles, and his loss is felt deeply by those with whom he was associated, not only socially, but in an intimate business relation.

NEW WRINKLE IN SEWER PIPE.

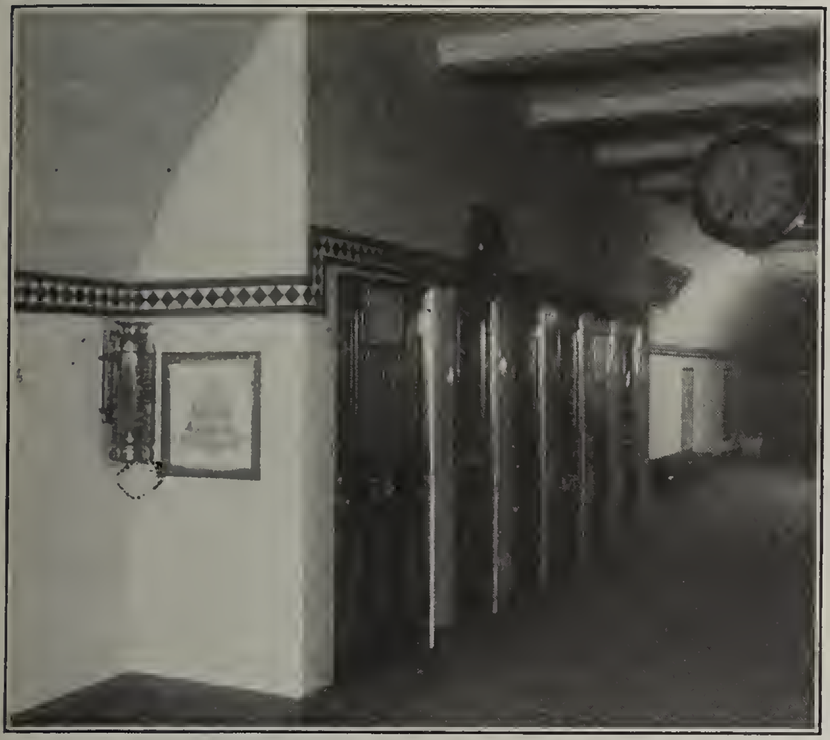
Ohio Inventor Believes Wedge-Like Projections Inside Bell Big Improvement.



A recent invention that will interest sewer-pipe manufacturers is numbered 996,023 and patented by Samuel McAdoo, of Toronto, Ohio. He has assigned to the National Fireproofing Company, of Pittsburgh, Pa. The application was filed May 19th, 1909—Serial number 497,001. It is described as follows:

A pipe section, formed of plastic material, having a bell at one end whose wall is of substantially uniform thickness and is provided on its inner surface with spaced wedge-shaped projections, the inner faces of said projections extending in a circumferential direction from the inner face of the bell toward the center of the bell, and receding abruptly from the high point of said projection to the inner face of the bell, said projections being adapted to be engaged with the peripheral faces of corresponding projections on the end of another pipe section by relative rotary movement in one direction only, the pipe section also having a series of longitudinally extending ribs on the exterior surface; substantially as described.

Floor and Wall Tile



Ceramic Mosaic Wall Tile in Boston (Mass.) Subway Station, Furnished by the Robertson Art Tile Company. Note that the tile covers the ceiling and roof beams.

The day of varied shades in tile is approaching rapidly, following closely the adoption of mingled colors in facing brick. While uniformity of size and color is necessary in pattern-work and mosaic designs, the old set color and unvarying straightness of joint in the more solid forms of tiling is fast disappearing. The Trent Tile Company, of Trenton, N. J., has long been an exponent of regular irregularity, and, in a most perfect piece of trade literature, issued six or seven years ago, told of the man who asked for something he afterwards found he did not want—a perfect straight-edge. Finding that what he asked for would cost him a fabulous sum, he decided he wanted something that would suit his purpose just as well, at a nominal price. In a recent bulletin, issued to tile-setters by the same company, the doctrine of unnecessary perfection is given another knockout blow and a gospel of sensibility is preached convincingly. "All tiles," writes the author, "whether intended for walls or floors, are good and fit to serve a useful and ornamental purpose, except those that are broken or that have the glazed surface partly covered. A good tile is one that is well made and well burned, regardless of whether it is 'crooked,' 'chipped' or 'off-color,' and as long as it properly fulfills the purposes for which it was created, it is a 'perfect' product as regards that purpose."

Much can be said and much is said in defense of those who, by close sorting for color and size, come into the market with tiles that vary but a hair's breadth in size and run "true to sample" so far as color is concerned. Where the clay (and this is speaking mainly of unglazed tile) has but little shrinkage and comparatively little color variation, the uniformity is comparatively easy of attainment. And it naturally follows that emphasis is put upon the virtue of uniformity, mainly because "the other fellow" lacks the same facilities for producing "even shade and size."

The "last word" is spoken, however, in the finished work. If there be the same beauty, or greater beauty, in a floor that looks like a magnified chess-board, or a piece of linoleum, or a colored-cement surfaced monstrosity, as there is in a slightly irregular, blended-color tile floor, where soft hues of olive, brown and dull gold melt into wines and reds of sombre shadings, why do we rave over interior woodwork that brings up the natural grain—at opalescent glass and duo-toned frescoing?

The wonderful and as yet undeveloped pliability of color in tile lies in the smallness of the multiple. The

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ARE MADE OF
GALESBURG SHALE
The Purington Paving Brick Co.
GALESBURG, ILL.

Sterling Brick Company
OLEAN, N. Y.
Manufacturers
OLEAN BLOCK
Dunn-Wire-Cut-Lug
Made from shale
VITRIFIED
Many are not as good,
A few may be as good,
None Are Better

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A Strictly High Class Paving Block
Also:
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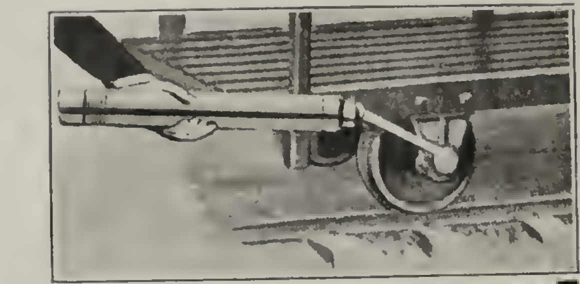
Use Toco **"Kiln Car" Grease and Save** *Time, Money* **and** *Trouble*


"The Better Way"

Toco "Kiln Car" Grease will not melt or run off the journals of rack cars when used in the intense heat of dry kilns. Applied with special grease gun, which we furnish with barrel or half-barrel orders.

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THE BLOCK THAT STANDS THE TEST
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blending of subtle shadings, the "accidental high lights" our artist friends discuss, the multiplicity of color that can be used in one floor or in the walls of one room, each color subservient to another, waiting to be brought out and amplified by some other part of the decorative scheme, are latent in the little burned clay rectangles; it seems a pitiful waste to lay so many potentialities together in such a way that the completed surface will be an unrelieved expanse of but one color, uncompromising, uninteresting—and therefore, unnoticed.

Drain Tile

In a circular issued by the West Point Brick, Tile & Lumber Co., of West Point, Miss., James Pryor, the secretary, treasurer and manager of that company says: "For several years there has been considerable agitation for diversified and intense farming in the southern part of our country, with some apparent results. These results have been most noticeable where the farms have been drained with tile.

"Many experienced and successful farmers from the Northwest are attracted to our section by the extremely low prices asked for fertile land and because of the natural and inexpensive advantages of easy drainage. When these new-comers invest in our land, they reserve a part of their capital to put the land in shape for its highest state of cultivation by draining it properly with drain-tile. If asked what the possibilities of this part of the country are, they answer: 'These lands will double their crops when they are properly drained' and they are demonstrating this, by buying small tracts of land and, by tiling them, making forty acres produce more than eighty acres yielded in the hands of former owners.

"Drain tile is no longer an experiment—the increased crops on tiled land is the clinching argument in its favor. Just as soon as Mississippi lands are drained with tile, real estate will more than double its value, just as it has done in Illinois, Indiana, Iowa, Missouri and other sections of the country where tile is more generally used. And when the farms are well drained, all other businesses will increase proportionately as the crops are increased. The crops of any country are the mainstay of its finances and with increased crops we will have increased bank deposits, increased population, increased schools, increased building, increased good homes, increased everything except cost of living and taxes."

There is no doubt of the correctness of Mr. Pryor's statement, and it might be taken as a text by every drain-tile maker in the country. The trouble is, that modern improvements are generally brought into any community by the men who come into it from other parts of the country. Having wrestled with Nature and won results from worked out, forbidding lands, where brains aided muscle in the almost unequal fight, they bring some of the willingness to employ improved methods to the newer lands of their adoption—lands so fertile that they have sapped the energy and resourcefulness of the present holders and of their fathers before them. To these hardy and open minded new-comers will come a golden reward—indeed it is coming, in the double crops of which Mr. Pryor writes.

The Tyrone Brick & Tile Co. has just been formed at Tyrone, Pa. The company will obtain its charter July 17. The incorporators are John W. Gardner, William Fuess, Jacob Fuess and Leonard L. Fuess, all residents of Tyrone. Both building and face brick will be made.

A. M. Wooten, of A. M. Wooten & Co., of Memphis, Tenn., will enter the clay tile manufacturing business shortly, establishing a plant, probably, somewhere in Mississippi. He will begin operations modestly, but hopes to expand later. He is now located at 348 Front St., Memphis.

IF YOU HAVE A WANT
Make it known in "Brick and Clay Record's" Classified Columns, and get results.

Fire Brick

The Mount Union (Pa.) Silica Brick Co. made a number of improvements and now have a capacity of 25,000,000 high grade silica brick a year. The storage capacity of the plant has been increased to 5,500,000 by the addition of a large fire proof shed.

Hiram Schwank's Sons, of Johnstown, Pa., have completed a new stock house, 50x150 feet and three new kilns at Irvona, Clearfield county, Pa., which makes a total of seven kilns there. This plant is practically a new one, manufacturing fire brick of standard sizes, shapes, nozzles and runner brick. They also operate a plant at Johnstown, Pa.

The General Refractories Co. has enlarged the W. H. Wynn Fire Brick Works at West Decatur, Clearfield county, Pa., and has a daily capacity of 70,000 brick. It has also enlarged the Blair silica brick works at Sproul, Pa., which has a daily capacity of 75,000 brick. The capacity of the Olive Hill (Ky.) works has been increased to 70,000 brick a day.

The West Branch Fire Brick Co., of Drury's Run, Pa., has made improvements so as to double the output of that plant.

J. T. Roberts, manager of the Carnegie Brick & Pottery Company, reports a very good business in fire brick, which is the only line now handled by this company. A fire brick is being produced that meets the needs of the most exacting consumers, and this has led to the booking of some large contracts. Mr. Roberts says that the market has been improved considerably by the establishment of new steel plants and oil refineries.

PEAT AS AN INDUSTRIAL FUEL.

The widespread occurrence of peat deposits of excellent quality, in the Northern part of the United States, has attracted attention to their potential economic value, as sources of heat, power and light, says Charles A. Davis, in an advance chapter from "Mineral Resources of the United States"—Dept. of the Interior—U. S. Geological Survey: Three factors have intensified the interest in peat during the last decade—(1) the higher cost of other fuels, especially coal, in districts remote from mines; (2) the frequent and well-substantiated reports of the rapid increase in the use of peat as fuel in Europe, particularly in large manufacturing and power plants; (3) the fact that peat deposits are most numerous outside of the fields of workable coal, in regions where the winter is severe and where manufacturing is already well established.

Numerous attempts have been made in many parts of this country to produce peat fuel on a commercial scale, but work on nearly all these enterprises has been discontinued apparently, so far as could be learned, before they had reached the producing stage. Inquiry has shown that the chief cause of the failure of most, if not all, such attempts has been too great optimism, arising from ignorance of the real difficulties to be met in producing peat fuel in marketable form. Insufficient capital, the attempt to use new and hitherto untried machinery, lack of experience in handling the raw material, and poor transportation facilities have also contributed to cause failure. So far as is known, very few of the peat fuel plants established in this country have gone beyond the experimental stage, and many of them were never equipped with essential machinery. The failure of such plants to establish themselves should not be charged to the intended product, which never was made, but to the real cause, for there seems no reason why properly located and equipped peat-fuel plants in charge of skilled superintendents should not be successful sources of local supply of cheap fuel of good quality.

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Paving Brick

Paving brick plants throughout the country are working to capacity, with order files filled to the limit, and prospects for steady operation throughout the year never brighter. Road improvement is at its height, and paving brick have never had such a demand as is noted this season. Prices are reasonable and municipalities are using greater volumes of paving brick than ever before recorded. The United States Department of Agriculture in sending out bulletins anent good roads, declares that when roads are improved, land values immediately soar. Where such roads are improved with brick, values more than double, on account of the lasting quality of brick paving. All these conditions are reflected upon the manufacturers in the way of increased orders.

The Shawmut brick plant near Brockwayville, Pa., which was destroyed by fire early in the spring is being restored and the work of rebuilding is fast nearing completion; all the damaged buildings are being replaced with new and larger ones, the new plant is being equipped with the most modern machinery possible to produce, and with the orders the company has on its books it is assured steady work for months to come.

James M. Hoskins, manager of the Terre Haute (Ind.) Vitrified Brick Company, was recently compelled to turn down an order for half a million brick for paving purposes in Louisville, Ky. The order came through E. B. Schmidt, formerly city engineer of Terre Haute, who is now at the head of the street paving department of the Kentucky metropolis. An order for 1,250,000 pavers for work at Mattoon, Ill., and orders from Decatur, Ill.; Indianapolis, Ind., and Muncie, Ind. are keeping this plant busy. A new clay pit is being opened, and as soon as the clay is available in quantities, Hoskins will be able to say "Let them come—the more the merrier." Just now, he has to go a little slow, taking on business, until he can see a way of keeping everybody satisfied with the deliveries.

SYSTEMATIZING PURCHASES FOR ROADS

Recommendations to be Made at American Roads Congress at Detroit, Mich., Week of Sept. 29th, 1913.

How to systematize the purchase of road equipment and materials will be explained in a paper to be read by Henry G. Shirley, chief engineer of the Maryland State Roads Commission, at the American Road Congress, which will be in session during the week of September 29, at Detroit, Mich. This paper will deal with one of the many important subjects to be treated by experienced engineers, public officials and road contractors at the big meeting. The Maryland Commission has been working out the problems of good road administration in a most painstaking and thorough manner and Mr. Shirley's paper will undoubtedly present some interesting conclusions.

"The Merit System of Road Administration" will form the subject of an address by John A. McIlhenny, president of the United States Civil Service Commission, and undoubtedly will attract nation-wide attention. The political favoritism, incompetence and indifference that characterize the administration of our public roads cause a loss that is estimated by some experts to be as high as $40,000,000 a year, and Mr. McIlhenny's paper will show the demoralizing effect of political domination in road management, pointing the way to an efficient system which will mean skilled supervision and continuous, practical service that is impossible under present conditions.

With the Potter

That the Federal government proposes to sink the probe of the pottery investigation as deep as possible, is shown by the action of the Bureau of Foreign and Domestic Commerce when the department sent three additional experts to the East Liverpool district a few weeks ago, to assist those who were already there. It is contended that the investigation will not be completed for several months, possibly not until late in the fall, and those in charge of the work will make no statements, other than that "progress is satisfactory." The pottery manufacturers, however, are open in the statement that there is nothing to conceal in their business, that while a few of the plants have made a small return on the amount of their investment, the average profit per dollar invested is inconsiderable and that the tariff on pottery and earthenware should not be molested.

These same claims were made before, at Committee hearings in Washington when the manufacturers threw down the gauntlet to the Democratic Administration, which was sufficient to say "come and see."

Different forms are being printed by the government to be filled out by the pottery workers, and these are being distributed among the employes of every pottery in the West. These same reports will later be tabulated, but the results will not be announced from any East Liverpool source.

The Midland Pottery Co., of Roseville, Ohio, has filed a certificate with the Secretary of State which has authorized the reduction in its capital stock to $10,000. The firm is engaged in the manufacturing of stoneware and stoneware specialties.

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The Ionia (Mich.) Pottery Co. has had plans prepared for the doubling of its capacity. Two additional kilns will be built, and a lot of new machinery added to the clay department.

W. N. Search, for several years engaged in the manufacturing of cooking ware pottery at Fredericksburg, Ohio, is having plans prepared for the erection of a new pottery at Avonmore, Pa. This ware possesses a light brown outside glaze, while the inside of the ware has a white glaze.

Once more the Edwin Bennett Pottery Co., at Baltimore, Md., will arise from the ruins of a fire. Plans for the rebuilding of this pottery are now being worked out. It is estimated that the company will spend upwards of $50,000 in the work of reconstruction.

George O. Anderson, general manager of the General Electric Porcelain Co., of East Liverpool, Ohio, which company operates plants in Ohio, West Virginia and New Jersey, will build a new plant at Parkersburg, W. Va., which will be the largest the company will own. However, the concern will not remove its general offices from East Liverpool. It was reported that all the business of the company was to be removed to Parkersburg, but this statement is denied by the officials, who say that the new plant is only being built to increase capacity, and in a territory where cheap gas exists.

With a capital stock of $10,000 the Oakwood Pottery Co., has been formed at Chester, W. Va., by J. E. McCament, A. O. C. Ahrendts, M. B. Kistler, C. J. Howell and Edward McKean. The firm is the only one of its character in the upper Ohio Valley district, inasmuch as it is an exclusive decorating proposition, buying both imported and domestic white ware, and then decorating it.

William Polk has perfected a scouring and brushing machine which it is claimed will revolutionize the bisque cleaning department of pottery plants. Two or three boys or girls can be used on this machine and do more work than is now done by six or eight matured and experienced brushers. Polk has been working on this invention for a number of years, and the first perfect machine was placed in operation in the Cartwright pottery at East Liverpool, Ohio, only recently. Only flat ware can be worked in the machine, but it will clean over a kiln of ware a day, which is an immense gain over the time made by the hand process.

Chemists in the laboratories of many domestic potteries are busy on the leadless glaze proposition, which, when perfected, will considerably cheapen the cost of manufac-

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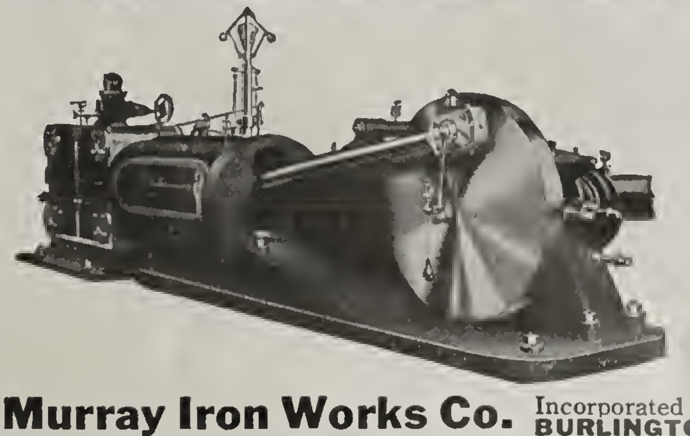

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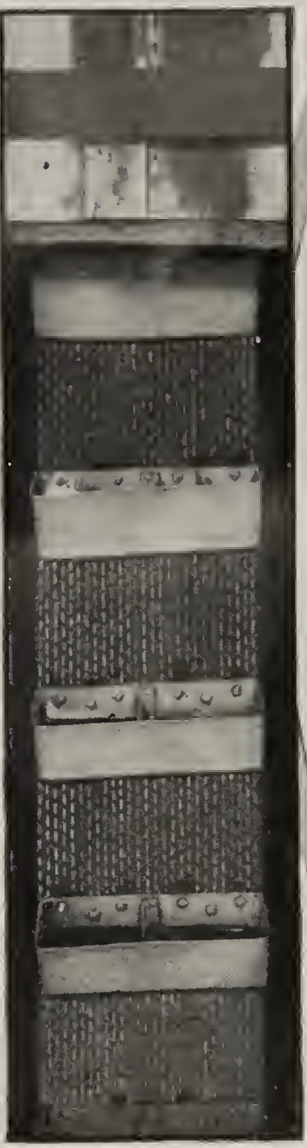

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ture in some grades. An effort has been made in Pennsylvania to pass a law concerning the use of lead in potteries, so the search for a commercially possible leadless glaze has to do with something besides its cheapness.

When the final figures on kiln building for the year are announced by the domestic pottery manufacturers for 1913, it is reasonable to believe that the greatest gain in years will be recorded. With new kilns so far completed this year and others in course of construction, there have been 45 added to the producing capacity. The Homer Laughlin China Co., and the Edwin M. Knowles China Co. are erecting 32 kilns in Newell, W. Va., each firm building 16-kiln unit plants adjoining each other. At Chester, W. Va., the Taylor, Smith & Taylor Co., has started the erection of a six-kiln plant, which will be an addition to its ten-kiln plant. At Salineville, Ohio, the National China Co. has erected two kilns, and at Crooksville, Ohio, the Crooksville China Co. has erected an additional kiln. At Minerva, Ohio, the Owen China Co. has put up two kilns and at East Liverpool, Ohio, the West End Pottery Co. has also added two kilns.

On top of this new construction, the Taylor, Smith & Taylor Co., has leased the William Brunt Pottery in East Liverpool, Ohio, and placed this six-kiln pottery, which was idle for several years, in operation.

The Goodwin Pottery Co., which has been idle for over a year will go out of the general ware trade and will soon be operated as an electric porcelain plant. The Globe Pottery in East Liverpool, Ohio, is the only domestic ware pottery plant now on the inactive list. It is likely that the Globe company will be reorganized before long and then this plant will also be placed on the active list.

A movement has been started by the Boosters' Club of East Liverpool, Ohio, to sell $10,000 worth of stock of the East Liverpool Sanitary Manufacturing Co., which was recently started in business there by taking over the former plant of the McQuilken-Curry Electric Porcelain Co.'s plant. This firm was the first to start the manufacturing of sanitary pottery in the eastern Ohio district, and was formed exclusively by East Liverpool men, headed by W. K. Mays, formerly connected with Wheeling, W. Va., sanitary potteries.

Conditions in the stoneware pottery business throughout the United States are said to be better than in any six months previously experienced. Practically every stoneware plant in the Zanesville, Ohio, territory has increased its capacity this season. Ransbottom Bros., who operate a large stoneware plant at Ironspot, Ohio, have increased their kiln capacity and have let the contract for the erection of a warehouse, 60 by 300 feet.

Established in 1854 as a single kiln proposition, and producing common yellow ware, then known as "Liverpool" pottery, the Knowles, Taylor & Knowles Company, of East Liverpool, has grown until, in 1891, it had a paid-in capital of $1,000,000. The plant consists of four complete, up-to-date potteries of thirty-two ware kilns, with two extensive decorating establishments of twenty-three kilns. The ware produced is accepted as standard in all markets, there being none better produced anywhere.

Presented by the Emperor of China to Said Pasha, to commemorate the cutting of the Suez Canal, a vase weighing nearly 70 lbs. and measuring 52 inches high, was the property of Princess Toussoun of Newton Manor, Cumberland, until it passed out of her hands while she was in ignorance of its real value. It was picked up at a sale of antique furniture by J. E. Thomas, an English connoisseur, who paid $12,500 for it. Believing that a companion vase exists, Mr. Thomas has advertised, offering $15,000 for the mate of the vase he now possesses.

The prompt action of the Zanesville (Ohio) Chamber of Commerce saved an industry to that city, the Bohemian Art Pottery Co., having been undecided whether it would, or would not rebuild the plant so seriously damaged during the recent inundation.

A course in designing, modelling and firing pottery was started about five years ago in the Madison (Wis.) High School and at an exhibition of the pupil's work, given in the Carnegie Library reading room at Madison, many beautiful pieces were shown. A brilliant hard glaze is a feature in some of the work, while a pastel green, in a soft, dull finish, distinguishes one especially good vase. The clay used comes from Red Wing, Minn.

Kiln and Burner

Aside from fire and flood and the depletion of the clay supply, no more serious trouble can arise on a clayworking plant than the loss of a good burner, unless it be the hiring of one who is incompetent, egotistical or unwilling to learn. For this is a branch of the business in which the intuitive sense is, as a rule, very highly developed, and no modern machinery, no electric appliance, no record or chart can wholly replace the "feeling" that comes to a good burner, after he has grown to "know" his clay, his kilns and his fuel. The loss of a man who has "grown up with the plant" and remembers how this and that and the other difficulty were overcome, how the clay from one deposit "acted" under certain conditions and how various kinds of fuel, dampers, draughts and methods of setting resulted in the past, subjects the plant to a series of experimental burns that will be expensive and, for a time, unsatisfactory. It is almost impossible for a new man—that is, a man new to the fuel and the clay—to produce good kilns at the beginning of his employment. If he does so, it will be partly accidental, even though aided by volumes of "kiln records" showing temperatures of previous burns, closely timed to day and night hours.

It is idle to say that "there is no trick" in burning, if the only change is a change in the burner—the clay being the same as that previously used and the fuel unchanged. It is foolish to say that "all he has to do is to keep the heat up to the scale given him on the charts" and reproduce the results of his predecessor. Many a plant manager who has felt that way has, by "letting the burner go," launched his yard upon a long voyage of experimental burns and, if the truth be told, experimental burners, who come and go until one, luckier than the rest, or a "better fellow," gets a chance to burn a round of the kilns and get his "feel" without spoiling too much of the ware.

On the other hand, men who have been connected with one plant for a number of years are prone to have an exalted opinion of themselves, and an idea that any change, be it in setting, fuel or temperature, will result disastrously—that is, unless they, themselves, suggest it. Here is the point where "intuition" begets egotism, and is not an unmixed blessing. It can, however, be turned to account by the careful plant-manager, who, knowing the amount he gains by mixing with other plant-managers at conventions and visits to other yards, should remember that the burner seldom, if ever, is given a chance to see what other burners are doing on competitive plants. Being, in a way, a pessimist, a burner does not like to have experiments tried on him, but he is, as a rule, perfectly willing to try experiments himself and *if he tries them as a result of his own investigations, he will be much more apt to make them successful than he would, were they suggested by some one who would take all of the credit for success, and, perhaps, blame the burner if the experiment failed.*

It is not wise to condemn your burner as unprogressive, when you give him no opportunity of being anything else. It is not wise to let him go, because he does not produce the results that you think should be produced, mainly because they are being produced at some other plant. You do not know what chances that other burner was given to increase his efficiency, by a plant-manager that saw a great deal farther ahead than you ever thought of looking.

Where would you be, if you were "chained to the plant" year in and year out? What would you have gained in the way of "new methods and processes" if some one else did all the traveling?

Alfred S. Freeman, of Steubenville, O., who has been interested in the fire brick business at New Cumberland, W. Va., has formed the Devonshire Brick Co., of Dillonvale, Jefferson county, O., with a capital stock of $50,000. Associated with Mr. Freeman are J. Oscar Baylor, Edward L. Mahon, Charles L. Crawford, and George P. Wilson. The firm will make a line of face and building brick, and will enter extensively into the manufacture of other clay products.

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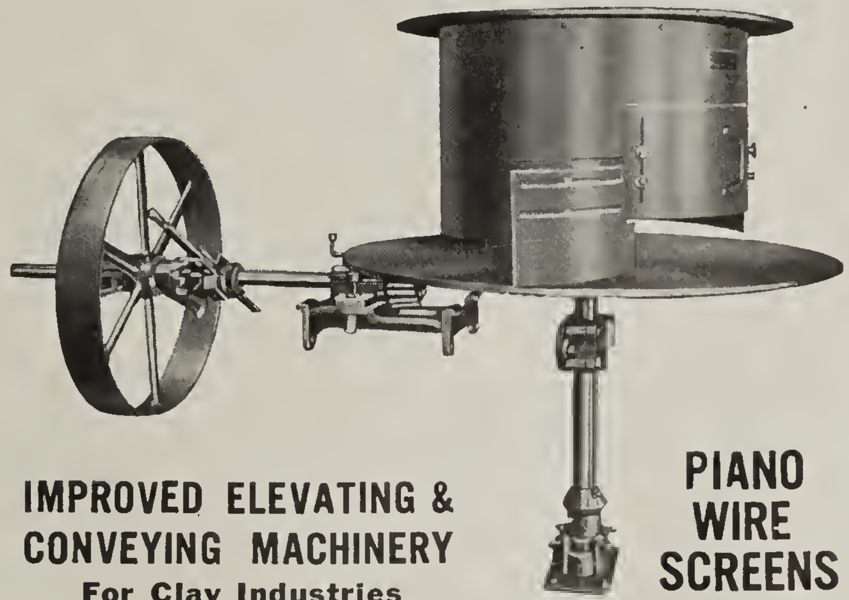

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Modern genius beats the ancient genii, and every day modern science conjures new miracles in the structural art that put to shame the performances of Aladdin and his wonderful lamp, says the Minneapolis (Minn.) "Journal." To build for $2,200 a full two-story residence that, when finished, might easily be appraised at double that amount is so close to the performance of Aladdin's genii, that it calls for an explanation, even in these days of modern scientific achievement, and yet such a house is being finished in Minneapolis, at Como and Twenty-fifth Avenue, S. E. It actually cost the owner $2,200 and the material in the walls is the same fireproof, hard burned hollow clay tile that has become so popular in the construction of palatial residences and large public buildings.

The style of architecture is distinctive, different from every other house in the neighborhood, both in type of design and method of construction. Those who believe their housetops should point to the heavens like a church spire will not find that requirement fulfilled in this one, for it has a flat roof. This is what enabled the architect to design a full two-story house for less than the cost of a story and a half, and explains part of the miraculously low price. A great deal of money is unconsciously wasted in useless roof area in the average house.

There is a protecting air space in the roof, which together with the three air spaces in the hollow tile walls, makes the house more sun-proof as well as more frost-proof than the wooden dwelling with a high pitched roof. It is an attractive looking bit of architecture, well proportioned throughout, with a full covered porch in front, and a wide cornice spreading out just below the rim of the roof, in keeping with the style of an Italian villa, which it represents.

One of the notable points brought out by a close inspection is the absence of serious cracks in the plastering of the walls, which so soon follow the application of this material over wooden laths, due to the shrinking of the wood. In this house, such wall cracks will never appear, for the inner walls are of "pyrobar," a gypsum product, consisting of hollow plaster blocks resting on steel girders running under the floors. And this is another remarkable feature in a $2,200 house—steel girders. The man of moderate means is today coming into his own. The same high-class materials—fireproof hollow tile, steel girders, gypsum partitions—are being used in his home as in the mansions of the wealthy. And that the poor man might take no chances, the rich man has been made to play the part of the dog, upon whom these novel forms of construction were tried out and their worth determined. Now satisfied of their demonstrated superiority, the man of moderate means accepts them for his own home at a price he can afford to pay, secure in the endorsement of the building inspector and the better class of architects and builders.

Too Much of a Good Thing.

Here's a letter from W. W. Lewis, manager of the Batavia (Ia.) Brick & Tile Co. Ever notice how active these Iowa fellows are? You will find them up in front in every movement and it is no surprise to see them predominating in the Letter Box.

> We are after all the good things we can get in this world for nothing, but we do not feel like imposing on our friends to get them. You are sending us, through some error, two copies of "Brick and Clay Record." Perhaps this is a mistake. It may be intentional. Business in our line (brick, drain tile, hollow block and silo block) is a little slow this spring. It is too dry to sell tile and we do not make a specialty of brick. We are turning our attention to the silo block and silo building. We are making a splendid block and having a very good trade on them.

Of course the fact that Mr. Lewis got an extra paper was an error in the mailing room. "Brick and Clay Record" is too expensive to give away.

Freight Tariffs

Regarding wrong classifications, on which "Brick and Clay Record" touched lightly in the July 1 issue, it is well to say that "rate clerks" may be depended upon to assign the classification taking the higher rate, if the matter be left to their judgment. In this way they take no chances, always acting on the theory that it is much easier to refund overcharges than to collect undercharges.

Another danger to which the shipper of clay products is always exposed, is the fact that railroad clerks, being notoriously underpaid, are rarely of a mental calibre that would lead them to use any sort of judgment in routing, classifying or rating a shipment. By "any sort of judgment" we mean any that would involve following any line but that of getting the highest possible return for the company's services—and so keeping out of trouble.

Lack of initiative and general inefficiency would seem to be the only explanation for the underpaid railroad clerk. Certainly the "chances of advancement" are not so great that he can afford to stay on and on at a meager salary—and he certainly is not "learning railroading." Yet he works very long hours, has work "piled up on him" and struggles from under it so that he can get home at a fairly reasonable hour. Comparisons of salaries paid for clerical work by the railroads and those paid for the same work in commercial life, would naturally take the better men away from railroading. The consequence is, that the shippers suffer from the lack of initiative and the inefficiency that keeps the underpaid clerk in his job.

You know what stupid and underpaid labor costs you, in any department. You do not know what stupid and underpaid labor is costing you in the shipment of your product and you never will, unless you either watch the work of the underpaid railroad clerk yourself, or set a watch upon him through the services of a freight expert.

Changes in freight rates, which have been made since our last issue, all of which are now in effect, are as follows:

From Eastern Points.

From Auburn and Hamburg, Pa., Brick, to Troy, N. Y., $2.00 per net ton.

From Bakersville, N. J., Common brick, to Germantown, Pa., $1.05 per net ton.

From Roseton, N. Y., Common and building brick, to Easton, Pa., 7c per cwt.

From Middle West Points.

From Anna and Cobden, Ill., Clay, to Dollar Bay, Hancock, Houghton and Lake Linden, Mich., 19c per cwt.

From Chicago, Ill., Brick and articles taking same rate, to Dollar Bay, Mich., 10c per cwt.

From Chicago, Ill., and Milwaukee, Wis., Brick and articles taking same rate, to Minneapolis, Minnesota Transfer and St. Paul, Minn., 10c per cwt.

From Cincinnati, Ohio, (originating south of the Ohio and east of the Mississippi rivers) clay and kaolin to International Falls, Minn., $4.80 per net ton.

From Danville, Ill., Brick, and articles taking same rates, to Genesee, North Prairie, Eagle, Palmyra, Whitewater, Lima, Milton and Milton Junction, Wis., 7c per cwt.

From Evansville, Ind., Brick (except bath and enameled) to Tuscola, Arcola, Humboldt, Dorans and Mattoon, Ill., 85c per net ton: to Magnet, Ill., 75c per net ton: to Aetna, Neoga, Sigel and Effingham, Ill., 85c per net ton; to Lincoln, Ill., $1.00 per net ton; to Sullivan, Allenville, Coles, Lipsey, Jones, Montgomery, Lerna and Janesville, Ill., 75c per net ton.

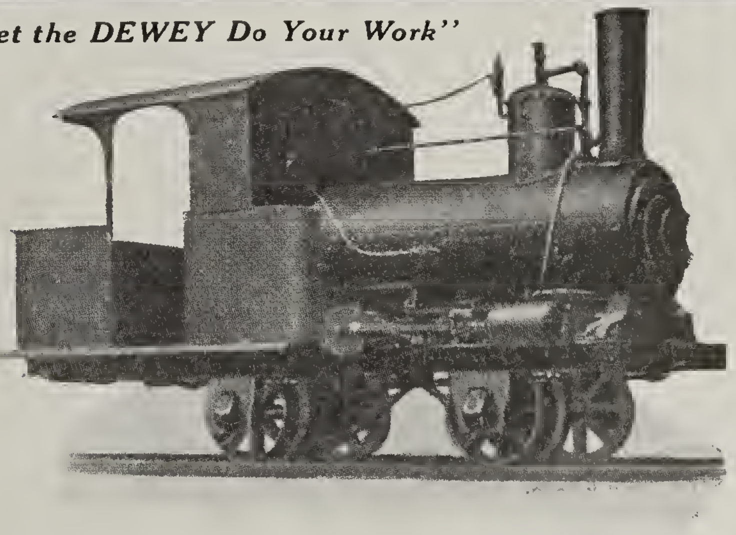
Bucyrus Dragline Excavators

THIS BUCYRUS ELECTRIC DRAGLINE EXCAVATOR OWNED BY THE CHEROKEE BRICK CO. OF MACON, GA.

has made it possible to dispense with one locomotive and crew and nine men in the pit. Mr. W. E. Dunwody, the president, says: "Any man who is digging clay where his clay hole is subject to overflow, cannot afford to use anything other than a dragline, and there is no machine in the United States which is equal to that turned out by the Bucyrus Company."

BUCYRUS COMPANY
P.O. Box A. South Milwaukee, Wis.
New York Chicago Duluth Birmingham
J-3-1

"Let the DEWEY Do Your Work"



The Boiler of the DEWEY

The Borden Brick & Tile Co., Goldsboro, N. C., is using a DEWEY locomotive. It discarded the mule-driven car and declares it not only got an increased efficiency but reduced the cost of hauling.

This concern hauls eighteen cubic yards of clay to a load on a trip of one and a half miles.

How many mules would it take to do this same thing and how long would it take them to do it?

It is our own special design. It has unusually large capacity, is a quick steamer, and is economical in fuel consumption.

These three characteristics have made the DEWEY especially adapted to clay pit work.

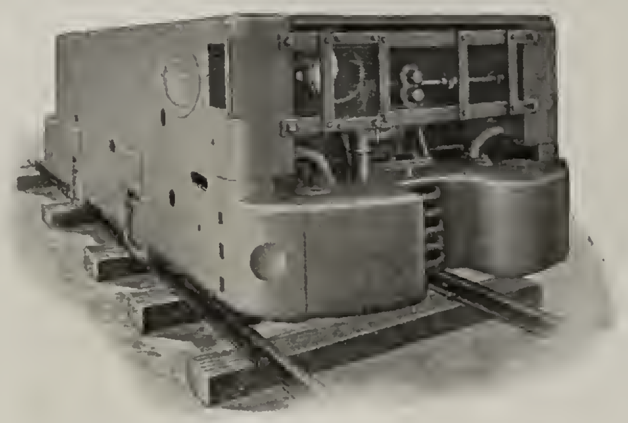
Strong, Safe, Long-Lived

The DEWEY boiler is designed to reduce to a minimum the numerous angles and corners and pockets which serve as collecting places for mud and scale—distressing features about every standard locomotive boiler.

The DEWEY boiler, therefore, is stronger, safer and longer-lived and does BETTER work than the regular types.

The DEWEY sells for several hundred dollars less than any of the standard type locomotives of the same size and weight.............. **$1200**

DEWEY BROS.
Goldsboro, N. C.

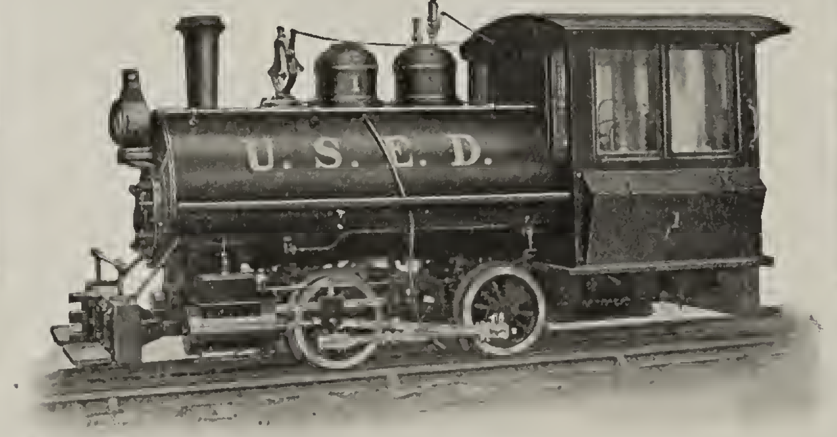


Gasoline Motors

Over 300 in Use—

Used by 150 Companies.
Used for Underground
or
Surface Haulage—
2½ to 16 Tons Weight.

Geo. D. Whitcomb Co.
Rochelle, Illinois



CLAY HAULAGE
Reduce costs of transportation by using a
Davenport Industrial Locomotive

Small Size—Reasonable Cost—Especially built for use of clay-products manufacturers', for hauling clay or shale from pits or mines to plant.
Cheaper Than Horse Transportation
and will reduce costs of delivering your material to your plant, thus increasing profits.
All About Modern Industrial Railways
Write us for particulars
Davenport Locomotive Works
Davenport, Iowa
BRANCH OFFICES: St. Louis: 654 Pierce Bldg.
Chicago: 12 and 14 So. Canal St. St. Paul, 1308 Pioneer-Press Bldg.
Seattle: 617 Western Ave. New York City, R. 2052 Grand Cen. Term. Bldg.
Canadian Representative: F. H. Hopkins & Co., Montreal, Que.

From Hannibal, Ill., Brick, hollow building tile and drain tile, to Alexandria, Mo., 4½c per cwt.; to Gregory, Canton and La Grange, Mo., 5½c per cwt.; to Fort Madison, Ill., 5 3/10c per cwt.; to Montrose, Iowa, 5 1/10c per cwt.; to Sandusky, Iowa, 4 8/10c per cwt.; to Santuzza, Mo., 5½c per cwt.

From Manteno, Ill., Common brick, to Detroit, Mich., $1.35 per net ton.

From Mason City, Ill., Brick and articles taking same rates, to San Jose, Greenview, Curtis and Petersburg, Ill., 50c per net ton; to Stanford, Ill., 70c per net ton.

From Menominee, Wis., Brick, to Greenwood, Wis., 7c per cwt.

From Murphysboro, Ill., Paving brick, to Poplar Bluff, Mo., $1.35 per net ton; to Silkeston, Mo., $1.20 per net ton.

From Napoleon, Ohio, Brick, to Adrian, Mich., 60c per net ton; to Detroit, Mich., $1.00 per net ton; to Ecorse and Wyandotte, Mich., $1.00 per net ton; to Lima, Ohio, 70c per net ton.

From Ripley, Ohio, Common brick, to Hillsboro, Ohio, 80c per net ton.

From Rockland, Mich., Clay to Macomb, Ill., 16c per cwt.; to Monmouth, Ill., 15c per cwt.; and to Whitehall, Ill., 16c per cwt.

From St. Anne and Woodland, Ill., Drain-tile, to Duluth, Minn., and Superior, Wis., 10c per cwt.

From Toledo, Ohio, Brick and articles taking same rates to Detroit, Mich., 3½c per cwt.; to Monroe, Mich., 55c per net ton.

From West Salem, Ill., Brick (except bath and enameled) and articles taking same rates, to Chicago Union Stock Yards, Grand Crossing, Fordham, Burnside, Kensington, Riverdale, New Chicago, Harvey, Windsor Park, Cheltenham, South Chicago, West Pullman, Blue Island, Homewood, Flossmoor, Matteson, Richton, Monee, Peotone, Manteno, Tucker, Bradley, Kankakee, Hospital, Otto, Chebanse, Clifton, Ashkum and Danforth, Ill., 6½c per cwt.

From Western Points.

From Albuquerque, New Mex., Fire brick and fire clay, to Douglas, New Mex., 22½c per cwt.; to Bisbee and Naco, Ariz., 25c per cwt.; to Tombstone and Benson, New Mex., 45c per cwt.

From Altoona, Caney, Coffeyville, La Harpe, Independence, Iola, Fort Scott and Fredonia, Kas., and Liberal, Mo., Brick (except fire, bath or enameled) to Durant and Ury, Okla., 10c per cwt.

From Fort Smith, Ark., Brick, to Stoka and Pittsburg, Okla., 7c per cwt.

From Fulton, Mexico, and Vandalia, Mo., Brick and articles taking same rates, to Hannibal, Mo., $1.10 per net ton.

From Inglewood, Cal., Pressed brick, to Los Angeles, Cal., 3c per cwt.

From Salt Lake City, Utah, Fire brick and fire clay, to Hayden, Ariz., 50c per cwt.

From Salt Lake City and Fireclay, Utah, Fire brick and fire clay, to Wabuska, Nev., 30c per cwt.; to Fallon, Nev., 34½c per cwt.

From Marmarosa, Cal., Cement brick to Los Angeles, Cal., 11½c per cwt.; to Pasadena, Cal., 14c per cwt.

From Sheridan, Wyo., Brick, to Kirby and Worland, Wyo., 20c per cwt.; to Crow Agency, Mont., 10c per cwt.; to Cody, Wyo., 15c per cwt.

Lower Production, Higher Price on Cement.

According to the U. S. Geological Survey, the production of natural cement was less in 1912 than in 1911. The report says that natural cement was produced in 1912 in 15 plants distributed in nine states, there being no change in the situation compared with 1911 except a decrease in production. The output during 1912 amounted to 821,231 barrels, valued at $367,222, compared with 936,091 barrels, valued at $378,533, in 1911, a decrease of 104,860 barrels, or 11.3 per cent in quantity, and of $11,311, or 3 per cent in value. The average price of natural cement at the mills in 1912 was 44.7 cents a barrel, compared with 40.9 cents in 1911.

Machines and Equipment

Ontario will have another brick plant shortly, under the management of Allen Grauel, of Berlin, Ont., Canada.

At Jackson, Ala., the Sample-Williams Mfg. Co. is considering the organization of a tile and brick plant in connection with its ochre grinding outfit.

A new office has been opened by the H. W. Johns-Manville Co., in the Commercial National Bank Bldg., at Charlotte, N. C. It is in charge of E. U. Heslop.

The New Equitable Life Insurance building in New York, 38 stories high, will contain approximately 36,000 tons of structural steel, the inspection of which, both mill and shop, has been intrusted to Robert W. Hunt & Co.

H. W. Gerlock, of Huntingdon, Pa., has just closed a contract with the Mount Union (Pa.) Refractories Company for a large quantity of dryer cars, kiln bands, power lime-mixers and other equipment.

E. M. Freese, maker of high-grade machinery for clayworkers, is touring Europe. Writing July 12th to "Brick & Clay Record" he sends greetings from Amsterdam and a picture of the "Gezicht op Marken."

"The Successful Use of Cling-Surface in Railroad Shops" is a little, 8 page booklet, filled with good ideas, and issued by A. Eugene Michel, of New York City, for the Cling-Surface Co., of Buffalo, N. Y. The latter will send it free, on request.

The Clearfield Sewer Pipe Co., of Clearfield, Pa., has contracted with the Dodge Manufacturing Co., for a complete rope drive equipment. Dodge rope drives are in use in a number of clayworking plants in the same district and are, we understand, giving entire satisfaction.

"KISSEL CAR" MOTOR TRUCKS.

The wise selection of a power driven commercial vehicle embodies these four vital elements:

The vehicle itself—its construction, design, power, economy, accessibility.

Its adaptability for the special service in which it will be used.

The permanence and repute of the manufacturer.

The facilities of the manufacturer to give service after the vehicle is in commission.

Every one of these elements—construction, ability and economy, adaptability to the widest variety of uses, responsibility of the manufacturers, and its service to owners after purchase, should claim the consideration of every business concern seeking to reduce haulage and delivery costs, to expedite service and to extend its zone of operation.

The power driven vehicle selected with these factors

The Martinsburg Brick Wagon Saves 1-2 Hour on Every Load

Some say even more, and it doesn't require experienced help to handle the load. Just release the lock by "a twist of the lever", and give the body a little push—it does the rest.

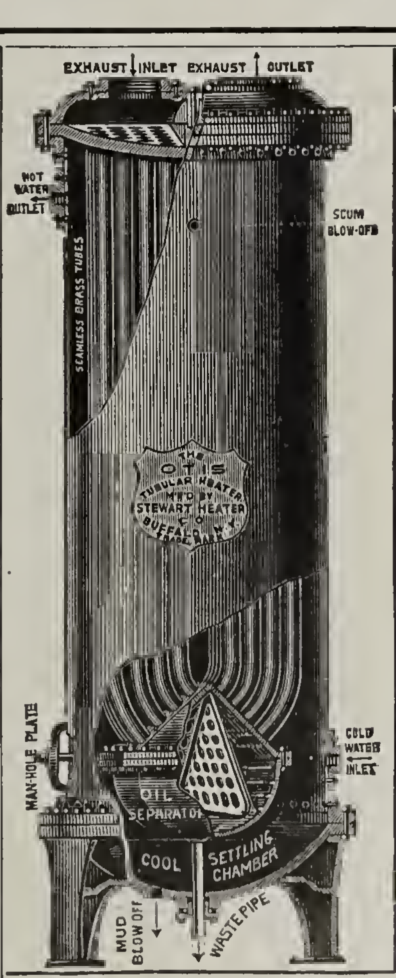
The load **slides** out and the brick are not chipped or broken. You can handle either **common** or **face brick.**

Capacity 1200 to 2000. Full cut under, short coupled and one-third easier draft.

AUBURN WAGON CO.
450 Race St. Martinsburg, W. Va.

THE OTIS

Tubular Feed Water Heater, Oil Separator and Purifier



is not an experiment but a tried and trusted appliance that the makers are not afraid to

GUARANTEE

To heat the feed water to the *boiling point* (210 to 212 degrees) with the exhaust steam without causing any back pressure, *also to extract the oil from the exhaust,* so that the exhaust steam after being passed through the heater can be used for other heating purposes, and the water of condensation for the heating system be returned to the boiler without the *additonal expense* of an *eliminator.*

We are so sure of the OTIS that we agree to pay all cost of a trial—freight, cartage, piping, etc.—if it fails to do all we claim for it.

Catalogue and Prices at Your Service

The Stewart Heater Company,
33 EAST DELEVAN AVENUE - BUFFALO, N. Y.

Don't Use Grates They Waste Your Fuel

Forty per cent of the expense of brick plant operation is fuel cost. Enough fuel is wasted to give you a real profit if you could use that waste. That this waste is unnecessary is shown by the following letter. Read it, and be convinced:

Boone, Iowa, May 25th, 1911.

Grateless Furnace Co., Des Moines, Iowa.

Dear Sirs: We are pleased to inform you that the fire boxes are still giving us the good results you guaranteed for them.

Our last burn of the kiln with the new boxes showed a saving of 22 per cent of coal and was burned in one day less time as compared with the old kilns.

These items, in addition to the better quality of ware, all aid in reducing the cost of the manufacture of brick and tile, which of course is what the stockholders are looking for and the managers are trying to get. We are sure that the cost of installation will be much more than offset by the saving in fuel for this season.

With best wishes for your success, we are, very truly yours,

Boone Brick, Tile & Paving Co.,
By A. B. Scott, Manager.
By W. H. Brecht, Sales Manager.

A saving of 22% in coal and one day in time! Isn't that worth considering?

Full description of the Grateless Gravity Feed Fire Box appeared in the July 15th issue, page 178. Write for pamphlets and detailed information.

P. O. Box 685 GRATELESS FURNACE Co **Des Moines, Iowa**

⅝ Yard Revolving Shovel in Clay Pit, Woodland, Ill.

THE LABOR QUESTION

is a very serious one with you, if your men go on strike—if they are continually laying off; if they leave you at the most critical moment. The key to the situation seems to be the use of labor-saving devices.

The little **Marion Revolving Shovel** shown above may solve your excavating problems. Why not write us today for information.

We build steam shovels in all sizes from the smallest to the largest.

The Marion Steam Shovel Co.
Station A **Marion, Ohio**

taken into careful consideration, will effect economy in comparison with the horse, over a wide range of haulage and delivery conditions. It offers greater efficiency and wider zone of operation than is possible with horse drawn vehicles.

The average, sound, well fed, well groomed, well shod horse attached to a light delivery wagon, covers about three miles an hour, that is, if he is driven by a driver who wastes no time at stopping points. His actual working day cannot exceed six hours without over-exertion, which gives him a daily distance covering capacity of eighteen miles.

The lightest "Kissel Kar" Truck made—the 1,500 pound model—will cover at the lowest speed fifteen miles an hour, and the hours of its capacity for sevice are unlimited. Many of this model are traveling one hundred or more miles every day.

The average cost comparison between horse haulage and the larger "Kissel Kar" models—there are seven, ranging from 1,500 pounds to five tons' carying capacity—is equally convincing from the viewpoints of both efficiency and economy.

Conservatively, a "Kissel Kar" Truck under normal conditions, will do the average daily work of a horse or horses in one-fifth the time, and is ready to do duty any part or all of the remaining hours of the day and night.

"Kissel Kar" commercial vehicles are the product of highest engineering skill and experienced manufacture. The road capabilities, economy, efficiency and ability of any "Kissel Kar" commercial vehicle to cut haulage costs can be convincingly established by demonstration under the conditions of service in which it will be used.

The "Kissel Kar" commercial line includes trucks and delivery wagons in a range of sizes, types and horsepower to meet almost every demand of the clay product manufacturer.

The Tropical Oil Co., of Cleveland, Ohio, has issued a circular setting forth the good points of "Toco" dryer-car and kiln-car grease, a lubricant that has an extremely high melting point, the claim being that it takes 300 degrees to melt it, that 325 degrees is the flash point and that it has a fire test of 380 degrees. It has been tested at the largest refractory brick plant in America and the results of that test, which was of six weeks' duration, will be furnished prospective users on request. With barrel and half-barrel orders the Tropical Oil Company furnishes gratis a well made, swivel tip, brass grease gun that will make oil feeding, through a sixteenth inch hole, a matter of easy accomplishment. The importance of an easy oiling device and an oil that will stand high heats, will be appreciated by all clayworkers, who know how often dryer- and kiln-cars must be oiled and the loss of time that the old process involved.

Orders for fire brick in the Eastern Pennsylvania district continue to be very good as various industries using refractory brick are still busy. The output on the whole has been quite up to the usual mark and the demand is fairly good. The Joseph Soisson Fire Brick Co. of Connellsville, Pa., is increasing its capital stock from $100,000 to $700,000 and its quota of working plants from six to ten. This expansion has taken over the No. 4 works at Bolivar, Westmoreland county, Pa., the enamel plant of the Bolivar Face Brick Co. and the Phoenix and Globe plants of the Phoenix Fire Brick Co. The increasing demand for coke oven and building brick made this necessary. The No. 4 plant has a capacity of 100,000 paving brick, the enamel plant 25,000 building brick, the Phoenix 20,000 fire brick and the Globe 15,000 silica brick. These plants will employ 600 extra hands and are now all in operation.

Sand-Lime Brick

THE SAND LIME BRICK ASSOCIATION.

Headquarters, 211 Fillmore Avenue, Buffalo, N. Y.
President, S. O. Goho, Harrisburgh, Pa.;
Vice-president, F. B. Allan, Toronto, Ont.
Secretary, W. E. Plummer, Jr., Buffalo, N. Y.
Treasurer, John L. Jackson, Saginaw, Mich.

Executive Committee.

G. Silvester, Calgary, Alta.; E. G. Chapman, Minneapolis, Minn.; E. M. Burchfield, Rochester, N .Y.; H. H. Tifft, Tifton, Ga.; L. W. Penfield, Willoughby, Ohio.

HOW TO MAKE GOOD SAND-LIME BRICK.

By P. C. Forrester.

Selecting sand and lime to make a few good samples of brick is a comparatively easy matter, but to produce good, hard sand-lime brick, to plant capacity and under every-day conditions, is an entirely different matter. To do this, a few things must be carefully attended to—the first being the use of clean sand, and of lime that is thoroughly slaked—and then a thorough mixture of these, with an excess of ground sand, to fill all of the voids. These objects achieved, a press that is in good order and a gang that will be careful in handling the product, and there is nothing very difficult in making sand-lime brick that will pass muster in any market.

I test sand for dirt by drying a sample of 100 ounces, this I place in a bucket of water and stir it up—then pour off the muddy water and add more clean water and stir again and continue to do this until the water is quite clean as it comes from the sand; then I dry the sample in a pan on a stove and weigh. If it weighs 98 ounces that means there is 2 per cent of dirt and if it goes more than this I do not care to put it in the brick without washing it.

The lime for sand-lime brick should be of good quality and one that is known for making good mortar; it should be thoroughly slaked or hydrated and I have yet to see a good sand-lime brick that has been made from quick lime ground or slaked one day and made into brick the next. I understand the Germans slake all their lime for a year ahead and while that ties up a lot of money, I think that lime ought to be hydrated at least 10 days before using.

Lime containing over 5 per cent magnesia acts differently than lime having none and when it has 25 to 40 per cent magnesia there is bound to be a greater difference and I think magnesian limes should be avoided for sand-lime brick. Any excess of lime above enough for binding the sand together is not only a waste of the most expensive ingredient, but it comes out on the walls like frost in a few months and gives the industry a black eye.

Mills that grind cement or ores are not adapted to grind sand economically, as they occupy too much space, take too much power and need constant attention.

With a good grinder it is not necessary to have sand from two or three places but get the cleanest sand and grind it up to the desired fineness. My plant is arranged so the sand from the pit is screened into a bin and a long slat conveyor drags the sand from this bin over a steam heater (heated from the exhaust of the engine), allowing it to fall into a chute where elevator buckets pick up all the dry sand and another string of buckets working on the same shaft pick up

The "Martin" BRICK MACHINERY
Modern YARD SUPPLIES
Soft-Mud or Stiff-Mud Processes
Get Our Plans
Dry or Wet Grinding Pans
Barrows and Trucks
Disintegrators
Clay Cars--Dryer Cars
Hoisting Drums
The Henry Martin Brick Machine Mfg. Co.
GET MARTIN PRICE LIST
LANCASTER PENNA. U. S. A.
GET OUR BIG CATALOG

PHILLIPS & McLAREN CO.
PITTSBURG, PA.
Builders of Pittsburg Standard Dry and Wet Grinding Pans, Rock and Ore Crushers
For BRICK, CEMENT, TERRA COTTA and All Kinds of REFRACTORY MATERIALS
When writing for Prices, state kind of Material and Capacity
Eastern Sales Office: Stephen Girard Building, PHILADELPHIA, PA.

Chase Improved Flexible Bearing Folding Deck Dryer Car

See this car before placing your order.
We also manufacture a full line of Side Dump, Bottom Dump and General Purpose Cars, Transfer Cars, Turntables, Switches, etc.

The Chase Foundry & Mfg. Co., Columbus, O.

The Superior Quality of

"INDUSTRIAL CARS"

is the

result of many years of practical experience and there has been no branch of clay manufacture in which they have not been placed in service.

The investment demanded for the best possible car for your plant requires careful investigation.

The Industrial Car will be your first choice and the one eventually purchased. The manufacture of dryer cars is only a small part of our line. We have a car for every need.

Write for our catalog and let us submit an estimate for the coming season's requirements.

Electric Locomotive & Car Co.
Successors to The Industrial Car Co. and The Cleveland Car Co.
West Park, Ohio

the right amount of hydrated lime and the two are dumped on a mixing screw and conveyed into the grinder where they both are ground and mixed thoroughly.

This product drops into a bin and a screw conveyor takes it to the measuring wheel which measures enough for 4 brick for the 4-mould press and drops it onto a mixing screw, where just enough water is measured and added to the mixture to make 4 brick. The screw, the measuring wheel and the water measure are run by the press so that when the press stops for any cause there is no material either being mixed or handled, which makes it very convenient.

I receive the lime (98 percent CaO) in barrels, and hydrate ten barrels at a time on the steam table, which dumps into an elevator and carries it to the top of the building, where it is screened and the over size shot down a chute and put with the next charge. The hydrate from the screen drops into a bin and it is barreled and stored to cool for 10 days before using; afterwards a barrel is rolled to the lime hopper where a mixing screw feeds it to the elevator as before mentioned and goes on to the grinder.

I believe this way of handling the sand and lime is far superior to where part of the sand is ground with all the lime, then put in a silo and the rest of the sand added later, because the lime is sure to gather up moisture and it will require an excess of lime in the mixture which will show up in the brick later on like frost. It also avoids the danger from fire as the heat is all taken out in hydrating and I believe allowing it at least 10 days to cool makes a sounder and better brick but, above all, everything depends on thoroughly grinding the sand and lime.

The tube mill so much in use by sand lime brick manufacturers is a make-shift from the cement industry and require considerable power and space and the sand it is trying to grind is often harder than the pebbles that are trying to grind it, and if mixed with lime the lime forms a cushion which prevents the pebbles from striking a blow on the particles of sand which, I believe, accounts for the small output. A good grinder will reduce the absorption of moisture in a brick to nothing, but one might as well use a piece of cast iron as such a brick because the mortar will not bind it; 6 to 8 per cent is little enough, as this gives a good bond. I know of no tube mills which are doing this.

"C. I. F." QUOTATIONS WANTED.

Foreign Buyers of American Goods Object to "F. O. B." Prices.

The Bureau of Foreign and Domestic Commerce has found in its foreign trade projection work, a disinclination on the part of American manufacturers to quote other than f. o. b. prices, and in a recent bulletin states that this policy has greatly disappointed many prospective purchasers of American goods. In an address before the American Manufacturers' Export Association, Mr. A. M. Fisher strongly urged the use of c. i. f. (cost, insurance and freight) quotations, in negotiating with foreign buyers. The elements of the c. i. f. quotations were analyzed and the great disadvantage to the foreign business concern, when it is confronted with an ordinary f. o. b. factory quotation were explained. A copy of the bulletin can be obtained from the Bureau of Foreign and Domestic Commerce, Washington, D. C.

CHALDEANS, NOTICE!
The monthly tablet appears on page 290 of this issue. Important Inscriptions!

Trade Review

New York.

A great deal of complaint is heard here among dealers and others to the effect that the demand for common brick in this market is very much below that of last year. As a matter of fact, however, the total sales of Hudson river brick in this market from January 1 to July 1 was 1,020 as against 990 sales for a corresponding period last year, while arrivals were 1,089 as against 994 for the same period in 1912. Prices also have been higher.

This fact has become very apparent within the last few days since the first half of the year has been closed and a new one started. That the brick manufacturers fared as well as they did, considering that last year was supposed to have been a banner construction year in New York, while the last six months has shown a reaction in construction amounting to more than one-third last year's record for the same period, shows that a new condition has arisen in New York, and that it is very favorable to the use of brick rather than concrete.

This statement is not a mere supposition, but one that is based on fact. For the past few weeks the newspapers have mentioned the incident of a concrete man who has been driven so hard by the aggressive and logical arguments of the hollow tile and brick interests before the code committee of the Board of Aldermen that he has decided to go down into his own pocket and finance a fire and water test to try to prove that the arguments of the tile people are based upon theory and not upon practice. Now consider the work that the Greater New York Brick Company has been doing in spreading the virtue of Hudson river burned clay in this market; through the efforts of influential brick men, the Public Service Commission of the first New York district was finally induced to use brick (and not concrete exclusively) in the fifty odd miles of subway construction work that is now in progress. This means that the brick manufacturers of the eastern district are finding a market for several hundred million brick where they had been almost entirely shut out of the original subway construction contracts, except for enamels.

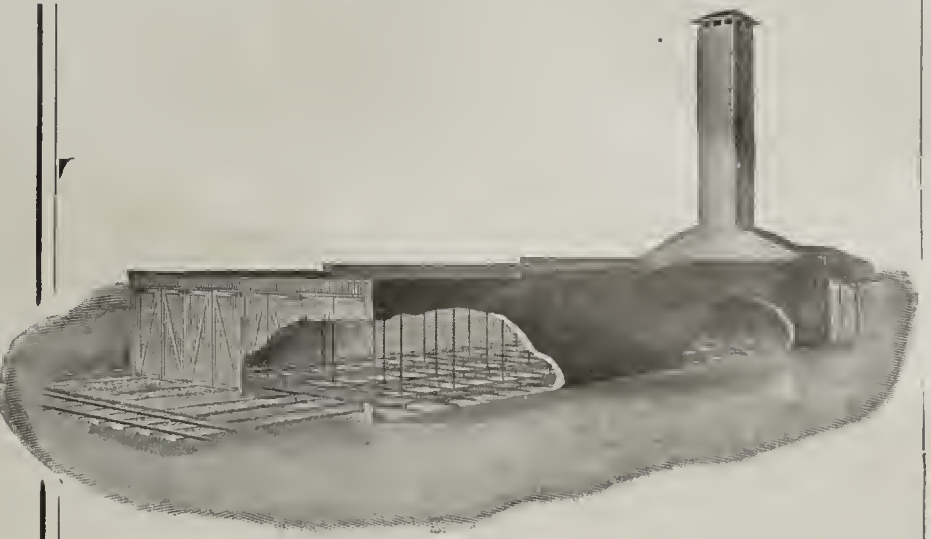
The wave of popularity which has swept over the eastern suburbs in favor of the hollow tile, fireproof residence has had its effect upon New York construction. Face brick and architectural terra-cotta are being used today in hundreds of cases where stone and iron were used only a few years ago. It is a common thing to see a "taxpayer" under construction, in which the facades are being laid up with attractive rough-face face-brick where the same type of building under construction last year would have had a sheet metal facade painted, or a stucco exterior.

Here is the answer to the query: "Why was more brick sold this year, when the market was sick, than in the first half of last year when the market was boom?"

The casual observer might have answered: "Because the market was manipulated more last year than this, thus permitting Connecticut brick to enter." But that would not be stating all the facts. The truth is that with brick over $7 bottom, Connecticut brick did come in and so did a larger quantity of Raritan river brick than ever before in recent years, but up in the Bronx, Connecticut brick is still coming in and in Brooklyn the Sayre & Fisher Company is having a constantly increasing market.

The fact is that the "Back to Brick" movement is having a very decided influence for good not only in New York, but throughout the East. It alone is responsible for heavy sales in a dull year when cement sellers are cutting prices and mills are overstocked while working at last year's schedules. The Hudson river sheds have an over-supply on hand too. Probably 150,000,000, but there is no depreciation to a brick in store as there is to cement put away to await a market. Brick is entering upon a new era of prosperity in the East and it has been freely stated that if the result of the litigation now in progress against the Greater New York Brick Company results adversely, some other device which will

How to Make Brick in the Winter



On the face of it, doesn't it seem inconsistent to maintain a brick plant for twelve months every year and to operate it for only six months?

Will you change that policy if we show you how?

Will you adopt a method that will enable you to run your plant during the winter—that will enable you to maintain your expert help—that will give you the chance to prepare in advance for the spring rush—that will produce a full year's profit?

The National System of Exhaust Steam Drying

gives all the above advantages, and more! It represents the lowest possible cost in kiln drying, because it is operated by the utilization of exhaust steam.

Competition compels your production costs to be cut to the minimum. Old, expensive methods will not do—not if you are in business for profit! The National System will positively minimize your drying costs, not only because of its economy of operation but also because of its comparatively low installation and maintenance costs.

Simply say, "Show Me," and we'll send you full information.

The National Dry Kiln Co.

1118 E. Maryland Street
Indianapolis, Ind.

I Plan, Design and Build Plants, Superintending Every Detail

My work is thorough. It starts with the clay pit. Your clay is analyzed to see if it is a commercial proposition. This analysis is a complete one. I tell you what ware it will make best.

I survey your property, locating the various parts of the proposed plant with a view of labor efficiency—of manufacturing economy—of shipping facilities.

I design your buildings in accordance with the latest and most improved manufacturing methods.

I select your machinery and do it without bias, without prejudice, as I owe allegiance to no machinery manufacturer.

I Do More—I Devise Cost Accounting Systems—I Install a Selling System—I Map Out Your Business Policy

My work is thorough. I apply the most modern efficiency methods in every detail. When you start the wheels going you can be satisfied they have started RIGHT—that you won't have to spend most of your days in regrets.

My work is thorough because it is not superficial. I dig down to the bottom of every problem. I refuse to take up another until the first is solved.

I Design Producer Gas and Semi By-Product Plants

In fact I can design your heat and power producing station so as to eliminate your entire fuel and fuel distribution cost, reversing your ledger account from a fuel cost per ton of product produced, to a profit.

You may think this a radical statement, but it is only the application of scientific methods to your business in a simple, common sense way.

I Re-design and Remodel Plants that Refuse to Produce Good Results

Within the last six months I have taken hold of some of the largest clay plants in the country and redesigned them—bringing them up to the highest efficiency—redesigning buildings, enlarging and reconstructing—installing new transportation systems to save time and labor and expense between the clay pit and the mill, between the mill and the dryer and between the dryer and the kiln, and then to the shipping or storage yard.

My Plants Look Like No Others

I do not follow precedent. A plant that I design, no more resembles the regulation, old-fashioned plant than does a modern locomotive resemble the prairie schooners of 1848.

This is because I use modern efficiency methods. My buildings are planned with the idea of economy at every point—the machines being placed with regard to their relation to each other. There is no lost motion—either in man or machine.

I do not confine myself to the set rules of the past. I go out into the broad fields of the world's industries and adapt methods, machines and devices that have proven efficient and put them to practical use in the clay industry.

If you are contemplating entering the clay product industry—if you are figuring on remodeling your present inefficient plant—if you want to know the difference between a modern plant and an old-fashioned plant, drop me a line. It costs nothing to ask me questions—it may save you dollars in the future.

W. C. KIRKPATRICK

Efficiency Expert to the Clayworker

316 Chamber of Commerce Chicago, Ill.

stand the test of the law, must be found or the bright prospects for the rehabiliment of brick in the public esteem, so earnestly fought for in the last two years, will fade.

Speaking of the Greater New York Brick Company, it is not without the pale of reason to expect a very decided change in program when the case is again called before Magistrate John J. Freschi at 2 P. M. on the afternoon of Monday, September 29, in the Criminal Courts building. "Brick & Clay Record" is advised by a very high authority that when the case is called, District Attorney Whitman probably will move to carry the case to the Grand Jury of the September or October term on the evidence already in and that Magistrate Freschi will probably decide to refer only the company as a corporation and not its individual directors, who at present face a $5,000 fine and a prison term. The company if found guilty would be subject to a fine of $20,000 or dissolution, or both.

Kentucky.

Brick manufacturers of Louisville are working steadily, and while there is no great amount of construction work going on in the Kentucky metropolis, stocks are disappearing with astonishing rapidity and the output of the manufacturers is being absorbed without apparent strain. It can hardly be said that a shortage in brick exists in Louisville, but at the same time contractors are finding that they can not get brick on the spur of the moment. Shipping is brisk, demand from interior points throughout Kentucky accounting for the disappearance of a good part of the output of Louisville plants. The situation is better than was expected, in view of the lull in building circles. Brick seems to be in demand for so many and various purposes that a slump in any one line has little effect.

Labor is causing some trouble to Louisville brick men, the class of help generally used in plants being responsible for the usual amount of difficulty. Negros, employed largely in pottery and brick plants, find the hot weather an unfavorable time for work, and accordingly take unusually long vacations during the summer. Not being adapted to cold, they have a great deal of trouble in the winter, keeping warm. Brickmakers, therefore, are having their work cut out in trying to get their colored employes to keep up the pace. One Louisville brick man has been forced to dispatch emissaries to various Kentucky points to round up a couple of dozen men. There are plenty of negroes on the streets and in the saloons, but the majority are not anxious to get out and toil in the hot sun. It has been suggested that a vagrancy law, such as is in effect in Lexington, Ky., would do a world of good in instilling ambition into the colored brother. However, this has not yet been introduced in the city council, and conditions will continue unsatisfactory in this respect until some enterprising soul discovers something that will convert the colored people into more energetic individuals.

L. R. Figg and G. W. Gosnell, the Louisville contractors who secured the bulk of alley construction work in that city, have decided to use the product of the Medora (Ind.) Brick Company in almost every instance. About $15,000 worth of work was secured by these contractors for Medora vitrified brick, which have been found satisfactory in all tests. The brick of the Carlisle Company of Portsmouth, Ohio, also will be favored on a few jobs. In the neighborhood of 3,000,000 brick will be used by the contractors during the remainder of the year, contracts involving that number already having been secured. Most of the orders are for alley work, though a number of streets are to be paved during the summer and fall.

Comparatively few contracts of unusual size have been secured by the Southern Brick & Tile Company recently, but enough smaller ones are on hand to insure plenty of work for the next couple of months, at least. One of the contracts of some importance is that calling for 100,000 face and common brick for the new Masonic building at Elizabethtown, Ky. While much of the demand for the output of the Southern plant is local, a good deal of shipping is being done to various parts of Kentucky and adjoining states. The Southern Brick & Tile Company is one of the new members of the Louisville Board of Trade, the city's leading commercial organization. A spirited membership campaign was launched recently, about a hundred business houses being secured. The brick company was among these, and is likely to profit from the Board of Trade connection. The organization includes most of the leading business concerns of Louisville.

The Louisville Fire Brick Company has secured a number of important orders, one of exceptional worth being one that calls for forty carloads of fire brick for the Kosmos Portland Cement Company, which is doubling the capacity of its plant at Kosmosdale, Ky. The work will require the remainder of the current year, and delivery will be made from time to time, as the brick are needed. Other orders of size are in prospect, and Secretary J. H. Bell and other officers are more than pleased with the situation as it now stands.

A contract for ten carloads of hollow tile is among those secured by the R. B. Tyler Company, of Louisville. The tile will be delivered to George Eady, who has secured the contract for the erection of the new power-house of the Seelbach Hotel. The new building is to be one of the handsomest of the kind in Kentucky, and no expense will be spared. Nelsonville tile is to be used, and delivery will be made during the next few months.

Owen Tyler, one of the well known Louisville brick men, has recently put into execution a novel plan which promises to reduce the cost of deliveries anywhere from 10 to 40 per cent, according to present indications. Freight rates from Louisville to towns within thirty or forty miles, such as Shelbyville, Pewee Valley, West Point, and others, are believed to be too high by brick men and others. Whether or not this is true has not been argued by the railroads. Recently, however, Mr. Tyler conceived the plan of delivering from Louisville to Shelbyville by auto trucks.

The method was tried once, with satisfactory results in every way, and the expense was cut down materially. The charges for use of the trucks, five-ton affairs, were not as great as the freight rates of the roads. In addition, the trucks backed up to the Tyler warehouse, got the load and delivered it to the building site in Shelbyville, thirty miles from Louisville. Whether it is practicable for Louisville brick manufacturers to deliver short distances by truck, remains to be seen, but the fact remains that Mr. Tyler effected a material saving on the Shelbyville shipment.

The new plant of the Coral Ridge Clay Products Company, located near Louisville, has actually been put into commission, and is running at a rate of 50,000 daily. The company now is soliciting orders for immediate and future delivery, and its officers regard the outlook as gratifying. W. D. Roy, president of the new company, is taking care of the sales end of the business, while George Fiedler, secretary and treasurer, is handling the financial part. The head of the mechanical department is W. A. Markley, who came to Louisville from Atlanta, Ga., in company with Mr. Fiedler. Though a young man, Mr. Markley has had years of experience in the brick and clay industry, and is regarded as one of the cleverest plant-managers in this territory. Mr. Fiedler, who also is general manager of the company, will retain offices in the Inter-Southern Building, Louisville, Ky., and will handle much of the company's business from that vantage point.

Some trouble is being caused at this plant by the scarcity of water. The wells which were drilled at the plant are slowly but surely drying up, and a heavy rain is needed. Unless this comes, the company probably will bore for new water sources in the hope of operating steadily.

Indiana.

While the brick business for the six months ending June 30 was quite satisfactory and showed a gain over the corresponding period of last year, business is slackening up considerably at this time. No great improvement is expected until the latter part of August or the first part of September. Ordinarily business is dull during July and August and this year is no exception. There are other elements, however, that enter into the present inactivity. One of these is the present financial stringency which is holding back the letting of several large contracts. There is no money shortage, but the banks apparently wish to "play safe" for some little time to come and are holding on to the funds at their command.

There has also been more or less labor trouble that has caused prospective builders to hold back. Brick masons

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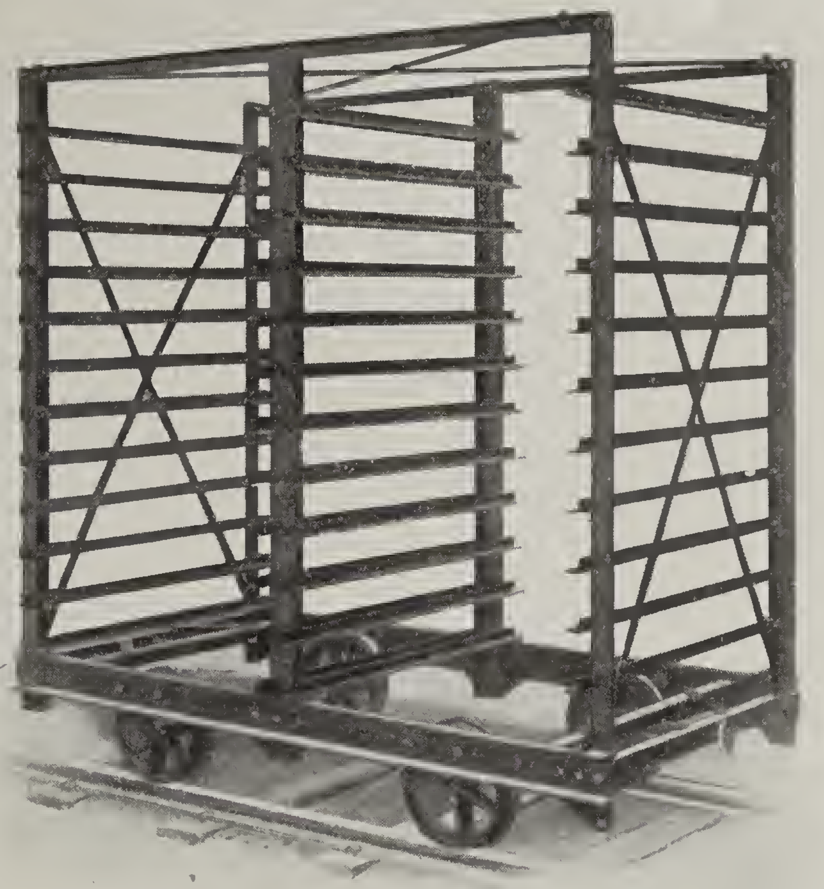
From the time the raw material is selected and purchased until the completed car is ready for delivery the most careful inspection is given every Gerlock Steel Dryer Car.



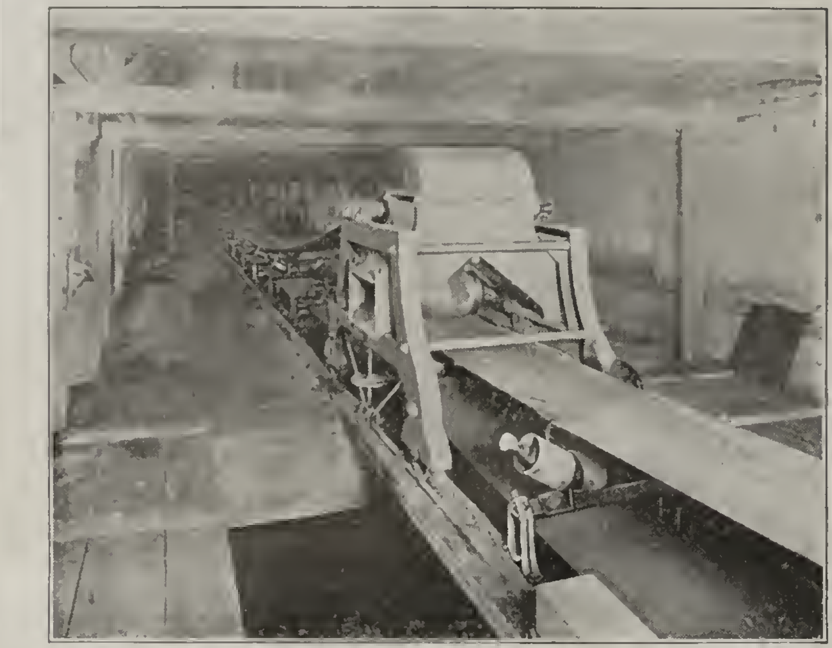
The best of material—the best of workmanship enters into the construction of every Gerlock Car. We permit no skimping—no substitution. The result is the PERFECT car.

"FREEFLOW METAL"

Gerlock's Free-Flow Babbitt Metal is anti-friction—has no shrinkage—stands heavy pressure and high speed—flows freely under all conditions and runs smooth even down to the thinness of paper.

H. W. GERLOCK
Huntingdon, Pa.

DODGE



Dodge Conveying System, Showing Belt Roller and Self-Acting Tripper

Efficiency and Economy in Conveying Material

Dodge conveyors are especially adapted to handle material in brick yards and clay works with ease and at a saving in cost that will make it to your advantage to consult us and get our prices.

The system consists of the conveying belt, head and tail pulleys, carriers and return rolls, with their bearings, shafts and take-ups, together with such additional fixtures as are necessary to meet the various conditions in the different installations.

The most important feature in our system is the perfect separation of the conveying belt from the carriers and the effectiveness with which it receives, carries and distributes the load.

In the Dodge conveyor special attention has been given the details in design, so that the highest conveying efficiency may be obtained and the frictional losses minimized.

There are no complex parts to get out of order, causing frequent shutdowns and losses. Ample adjustment has been provided for, so that a proper roll alignment may be secured. The system for lubrication is positive and copious; in fact, the Dodge conveyor is built to run continuously, hence the delivery of material is positive and at all times dependable.

If you are planning a conveying system for your plant, put the proposition up to the Dodge engineers. Skilled in work of this kind, they are in a position to best supply the best demand.

Dodge Manufacturing Company
Power Transmission Machinery
Mishawaka, Indiana
BRANCHES
Philadelphia 815 Arch St.
Boston 137-139 Purchase St.
Cincinnati 1st Ave N. & 3rd St.
Atlanta 28 S. Forsyth St.
Pittsburgh 337 Second Av.
Chicago 208-214 So. Clinton St.
New York 21 Murray St.
Minneapolis Cor. First Ave. North & 3rd St
St. Louis 408 N. 41st St.
Portland, Ore. 14th & Lovejoy Sts.

on several big jobs in Indianapolis were out for a time, but have gone back to work. Other workmen in the building trades are causing more or less labor trouble and prospective builders fear that if they start anything under present conditions the work may be tied up during cold weather.

The sewer tile business has been unusually good this year. The principal part of the business, however, has been outside of Indianapolis, the demand in that city not having been as large as in past years. The flood in March caused a vast amount of work and also done some damage to clay-pipe plants. As a result the plants have been pushed to full capacity in an effort to catch up and meet the increased demand.

A comparison of brick and fireproof construction for the first six months of this year with the same period of 1912 shows that business has been good. These figures follow:

	1912		1913	
	Brick	Fireproof	Brick	Fireproof
January	$ 16,050	$ 27,500	$ 39,100	none
February	4,500	5,780	63,100	$ 18,000
March	61,500	123,500	51,450	152,000
April	211,890	345,000	174,622	734,000
May	123,900	112,000	130,680	232,900
June	60,250	none	213,640	70,000
Totals	$478,090	$613,780	$672,592	$1,206,900

The total amount of building operations of all kinds in Indianapolis for the first half of this year was $5,110,907, as compared with $3,996,050 for the same period of last year.

J. H. Zinn, Indianapolis representative for the William E. Dee Clay Manufacturing Company, is just finishing deliveries on 18,000 feet of sewer pipe for Mars Hill, the new industrial suburb west of Indianapolis. This is the largest Indianapolis contract that has been let this year.

The Brooklyn Brick Company of Brooklyn, Ind., reports that its business for the first half of this year showed a large increase over the corresponding period of last year. The company reports business is not as brisk at this time as it was, but that a renewal of activity may be expected about the middle of August.

An eleven-story hotel building is to be erected in Indianapolis by the Indiana Grand Lodge of the Improved Order of Red Men. Contracts are to let shortly. The building will be erected at the southeast corner of Capitol avenue and Market street.

The business of the Moellering Brick Company at Fort Wayne, Ind., has recently been incorporated, the authorized capitalization being $25,000. Those interested in the company are William F. Moellering, Charles E. Moellering, Edward H. Moellering, Henry F. Moellering and Henry A. Gerberding.

Alabama.

Selling agents for brick in and around Birmingham report the demand good and a visit to the plants in the Birmingham district finds that they are all running to capacity. The recent strike in Birmingham caused some let up on new work, but all of the work that had been started when the trouble began is being finished and the delay has not been serious. The Roden Hotel has nearly all of its structural steel set and is ready for the brickwork. The Jefferson County Bank is up to the fifteenth story with the brickwork, the two rear walls being buff and the two fronts being of gray brick. Several smaller buildings have taken brick in good quantities and the business has been very satisfactory, considering the labor trouble. Had it not been for the strike, which was brought about by the carpenters, several other important structures, which are now waiting for a more settled condition, before tying up the capital that will be invested in them when they are once started, would be under way.

So much has been written and said about the coal and iron resources of Birmingham that few people realize that it has come to the front as the most diversified manufacturer of clay wares in all the south.

When the city was founded only common handmade brick were produced, and most of the common brick were shipped in from Montgomery, Atlanta and other places. In 1888 the first machine-made brick in the county were produced at Coaldale. In 1896 John W.

Sibley made the first brick from shale in the south, at the Coaldale plant, and inaugurated the vitrified paving brick business which has grown to such proportions that there are now three large plants in the Birmingham district, viz.: the Southern Clay Manufacturing Company at Coaldale, the Graves Shale Paving Brick Company at North Birmingham, and the Copeland Inglis Paving Brick Company at Alton, with a combined capacity of nearly 40,000,000 paving bricks per annum.

L. L. Stephenson, owner of the shale brick plant at Lovick, thirteen miles from Birmingham, has installed a complete electrical equipment and will be ready for operation within a few days. The power is furnished by the Alabama Power Company and marks a new era in brickmaking in the state. This change in motive power and the additional equipment will enlarge the capacity of this plant and will put it to the fore as one of the largest and most modern plants in Alabama. The daily capacity will be about 80,000 face brick, it being planned to stop the manufacture of commons entirely, except so far as the natural percentage of culls is concerned.

Philadelphia.

The demand for common building brick has fallen off a great deal this year. There is a slump in building operations and while there are some large buildings being erected the demand as a whole is not up to the last few years. Many say this is due to tariff agitation, which always has hurt business and the uncertainty that no line of business knows where it is at, whether the low tariff will put it out of business altogether or whether it will have to reduce wages to keep going.

Matthias Moyer, one of the old brick manufacturers of Reading, Pa., died a short time ago, aged sixty-seven years.

J. F. Brady, Philadelphia agent for the Independent Brick Co., has taken the selling agency for the Royalton Slate Brick Works of Middleton, Pa.

The Salisbury Brick Manufacturing Co. of Delmar, Del., has built a new plant, which is now in operation, with a capacity of 30,000 brick daily.

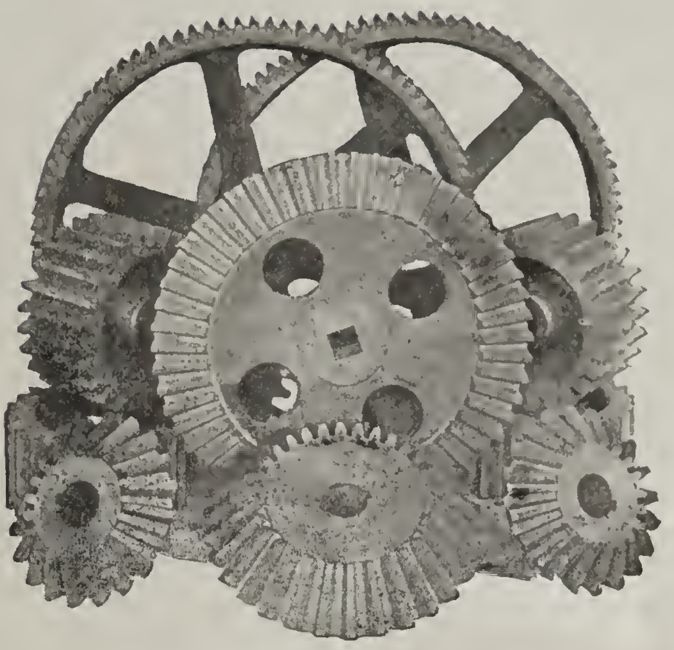
The new million dollar skyscraper to be built in Philadelphia by the Finance Company of Pennsylvania, will have exterior walls of light colored glazed terra cotta.

O. W. Ketcham of Philadelphia, Pa., making terra cotta at Crum Lynne, near that city, has erected a new chemical laboratory at his plant, and a large office building, which, with other improvements, make the plant equal to any individual factory in the East. Heretofore the chemical laboratory as well as the office was located in the main building. The new addition will tend to increase the capacity of the moulding department.

The Pacific Coast.

June was rather a poor month for the starting of new building projects in the San Francisco Bay districts, the local building permits being valued at $1,675,554—a considerable decrease from the same month last year. Other large coast cities, with the exception of San Diego, also showed a decrease, though business is extremely active at Los Angeles owing to the large amount of work started during the spring. A generally quiet condition still prevails in Oregon and Washington. The local record does not take account of the Exposition work, though so far little clay material has been used there except for sewer work. The demand for brick, however, is increasing a little, with contracts let for several large brick hotels and business buildings, and plans are about ready for some important office structures. The slightest easing up of the money market would no doubt bring on an unusual rush in building. Business is good at many interior towns, which are making unusually high monthly records.

The United Materials Company, representing the Los Angeles Pressed Brick Company in San Francisco and vicinity, reports the local trade in some of the leading staple products rather quiet, but is getting substantial orders for various special lines, and reports some delay in deliveries owing to an unusual rush in southern California. The new plant of the Los Angeles Pressed Brick Company at Santa Monica, Cal., replacing the factory burned last year, is now complete and was formally opened June



Gears
for
Brick-Making Machinery

Nuttall Gears meet the severe conditions imposed upon gearing in the Brick and Clay Industry, and give

Long Life
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Reliable Operation

A correct gear to meet your most exacting requirements can be supplied.

Let us know your requirements

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The largest gear works in the world

"Pioneer Machinery is simply the best,
And used in clay Products, it stands Every test;
Durable, high-class, efficient and true,
It does for its users what others Can't Do

PIONEER-MANUF'R'S-CLAY MACHINERY
TRADE T.R.C.Co. MARK
ESTABLISHED-1862.
TAPLIN-RICE-CLERKIN Co.
AKRON-OHIO-U.S.A.

REFERENCES:

Wm. E. Dee Clay Mfg. Co., Mecca, Ind.
National Drain Tile Co., Terre Haute, Ind.
Whitehall Sewer Pipe Co., White Hall, Ill.
Lehigh Clay Product Co., Lehigh, Iowa.
The Denny-Renton Co., Seattle, Wash.
The Gladding-McBean Co., San Francisco, Cal.
The Pacific Clay Products Co., Los Angeles, Cal.
W. S. Dickey Clay Mfg. Co., Kansas City, Mo.
Texarkana Pipe Co., Texarkana, Tex.
San Antonio S. P. Co., San Antonio, Tex.
Henry Stevens Sons & Co., Macon, Ga.
Pomona Terra Cotta Co., Pomona, N. C.
Shawmut Clay Co., Shawmut, Pa.
Robinson Graves S. P. Co., Uhrichsville, O.
Dominion Sewer Pipe Co., Swansea, Ont., Can.
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Send for Catalog No. 29

The-Taplin-Rice-Clerkin-Co.

The Clay Machinery Folks of the United States and Akron, O.

21, with elaborate ceremonies, the Mayor and other prominent citizens being the company's guests at a banquet served in one of the kilns. The company's northern California plant at Richmond is also very busy, having orders booked for some months ahead, including a large quantity for the Oakland schools and good jobs at Suisun and Stockton, Cal.

The Diamond Brick Company's plant at Pittsburg, Cal., started up about June 21 on a special line of white face brick, a stiff-mud wire-cut product, which is gaining considerable popularity in the local market. The company's red face brick, made by the same process, has also had a large sale in San Francisco.

Elmer O. Simons, who, with his two brothers, has owned and operated the Simons Brick Company of Los Angeles for many years, died June 26 at his home, 504 S. Boyle street, Los Angeles, after an acute illness of three months. Mr. Simons was 44 years of age, and had been a resident of Los Angeles for about 27 years past, having come there from Iowa. With his brothers, Mr. Simons built up a large brick business, the Simons Brick Company being one of the leading firms of southern California. At the time of his death Mr. Simons held the office of secretary-treasurer of the company. He is survived by his brothers, Joe and Walter E. Simons, Joe having the management of the plant.

Minneapolis and St. Paul.

The demand for common brick is a trifle slower than was expected from promises made in the Northwest earlier in the season. Owing to several contributory causes the general building trade in this section has been very good but has seemed rather sluggish, inasmuch as several projects talked of earlier have not gotten under way as yet. The work in the residence lines, however, has been steady and dealers are now able to fill orders promptly, although earlier in the year the demand has been sufficient to create a delay in filling shipping orders. Residence construction has always been depended upon by the manufacturers and dealers after a good season's crop, and the present season has fulfilled their expectations.

It is thought that the new brick rate, which has been ordered by the Minnesota state railroad commission of 4¾c as against a former rate of 6¼c between St. Paul and Minneapolis and Duluth, will help the local dealers and manufacturers in the lake region. The former rate equalled $31.25 per car, which the railroad commission found excessive and the new rate, which will net the railroads $23.75 per car is considered sufficient. The order provides that the rate must not be considered as establishing a rate for hauling brick the same distance in other parts of the state, and that if it fails to develop a good volume of business, the railroad company may apply to have the matter reopened.

Considerable differences and disagreements as to material to be used for paving purposes in St. Paul has added delay to the proposition of that city's paving a number of arterial streets this season. This fact added to objections by the property owners as regards methods of financing the payment and the spreading of assessments to adjoining and adjacent property have almost created despair that there will be any work done this summer. Brick has many friends who are anxious to see that material used and if the wants of the majority are given consideration, it is probable that "the dustless pavement" will prevail.

The recent advance in local lumber prices has helped the brick trade and made the slight advance in the price of common brick pass with little or no comment. The new addition to the conservatory of music at Carleton college, at Northfield, Minn., has been a good advertisement for the "best of all building materials" and it is said that on a large number of projects, brick has been specified as a direct result of their selection for the work at Carleton college.

Michigan.

Despite the fact that building operations are showing a tendency to fall off in volume, in various parts of the country, Michigan shows a healthy increase, particularly in Detroit. Taking as a sample, the week ending July 12th, we find that a prospective expenditure aggregating $715,925 is shown, as compared with $342,073 for the second week in July, 1912. The number of permits issued for new buildings was 160, as compared with 111 in the corresponding week last year. Brickmakers in the Springwells district of Detroit report a very strong demand and say that more brick have been used in Detroit during the past six months than in any first half year in many seasons. The orders came in early and have not stopped coming in since, the prospects being that business will be at the top notch for several months to come. One thing that has helped Detroit is the forethought of the face-brick dealers who, profiting by the experiences of last year, when it was practically impossible to get cars placed, and hundreds of buildings were, as a consequence, held up, stocked up all during the winter while the demand was light, and have been able to draw on these stocks to start buildings, or keep them supplied with face-brick until cars could be placed on the sidings or team tracks.

From reports that have been received from up-state brickmakers, demand for commons exceeds the the supply and a constantly increasing volume of hollow block is being used in residence work. Michigan is rapidly emerging from being a "lumber state" so far as its buildings are concerned, and offers a fine field for the brickmaker as well as the hollow and drain tile manufacturer. Especially in the latter field, the demand is increasing rapidly. Michigan is still a farming country, the influx of manufacturing interests having made her cities large centers of population, with a consequent hunger for farm products. The drain tile man will do well to canvass Michigan farmers, who are ready to consider any proposition that will make their land give bigger yields.

Considerable agitation along "good roads" lines is also under way, and Michigan like her sister state, Ohio, is getting ready to be lifted from the mud. Paving brick is being used in nearly all of the improvement now under way. Detroit's commissioner of highways' report shows that more paving brick have been used in Detroit since January 1, 1913, than in any similar period for a number of years.

S. J. Dalby, of Mt. Clemens, Mich., one of the committee of the Business Mens' Association of that place, which went to East Liverpool, Ohio, recently, to investigate the pottery situation there, says that $90,000 will establish a pottery plant at Mt. Clemens. He says that $150,000 will have to be raised to build an eight kiln plant and buy raw materials.

Items of Interest

The Toronto Fire Clay Co., of Toronto, Ohio, is electrifying its entire plant. The output is fine flashed building brick and some pavers.

The Illinois Brick Co. has declared a six-months' period dividend of 2½ per cent. The dividend declared six months ago was 2 per cent. The management has announced that the increase is not to be considered as a precedent.

The Boone (Iowa) Brick & Tile Works is having labor trouble. Having refused recognition to the recently formed union among its men, a strike was ordered, and, when an attempt was made to secure other men to take the strikers' places, some violence ensued. An effort is being made to settle the strike without further loss to men or employing company.

An order for 400,000 common shale brick was recently received by the Hancock (Md.) Shale Brick Co., for the new machine shops of the Western Maryland Railway, at Hagerstown, Md.

With the incorporation of the Wisconsin Crozite Brick Co., of Waukesha, Wis., the little Milwaukee suburb will have another industry—one of no mean proportions. The capital stock is $600,000 and the yearly output will be about forty million. R. P. Breeze, of the National Exchange Bank of Waukesha and S. B. Harding, of the Modern Steel Structural Co. are interested.

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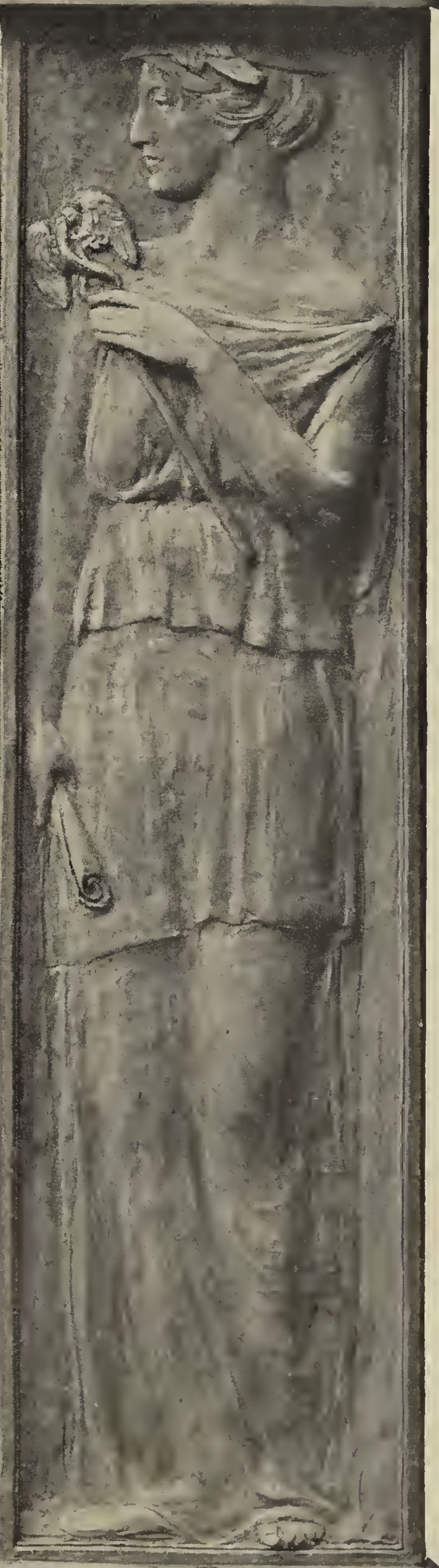
Asst. Sec'y. National Paving Brick Mfrs. Assn.



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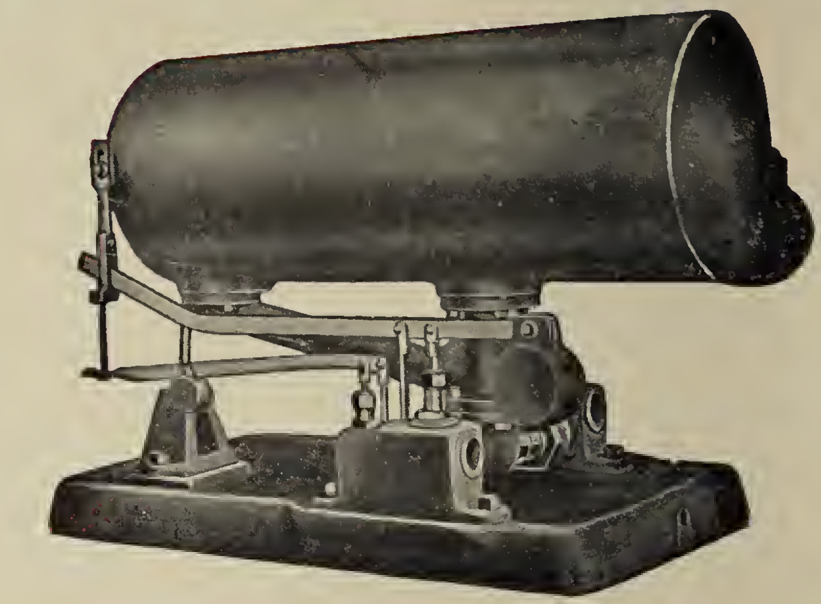

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BRICK AND CLAY RECORD, 445 Plymouth Court, CHICAGO

The Editor's Corner

A Department Wherein is Set Apart Comment and Opinions on Some of the Graver Problems Confronting the Clayworker and Co-Laborers

THE QUESTION OF PRICE interests us all. The Producer declares it keeps him from Success. The Middle-Man is certain he is treated unfair. The Consumer considers it vital and says he is being squeezed.

And each of the three—the Producer, the Middle-Man and the Consumer, KNOWS WHERE TO PLACE THE BLAME, for each points his finger at the OTHER.

A CLOSE analysis of the situation, however, by an unbiased mind, places a LITTLE of the blame on ALL with the scales tipping HEAVILY on the Producer.

The Consumer does not complain consistently about prices if those prices are UNIFORM and are not subject to UNEXPECTED fluctuations.

One price today and another tomorrow, or one price to Jones and another to Smith upsets Business.

What the Middle-Man WANTS is the assurance that he can figure TODAY on what he expects to use TOMORROW. If he can contract for 100,000 face brick or a certain quantity of drain tile or a carload of pottery at a certain price and be SURE that his rival will not make the same purchase tomorrow at a cheaper price, he KNOWS he is doing business in a SAFE, CONSERVATIVE manner and that he can depend upon a REASONABLE profit on his investment instead of having the constant fear of bankruptcy staring him in the face.

The Producer is content with a FAIR profit if he can at ALL times be assured he will receive it.

Under the present system of unregulated business—of unfair competition, the Producer is in a very undesirable position and Business with him is a GAMBLE.

Because he must consider the possibility of selling his wares tomorrow at a loss in meeting competition, he must take advantage of the LOOSE-BUYER of today and charge ALL HE CAN get.

Who suffers? The Consumer? Certainly. So does the Midldle-Man and the Producer.

The chief sufferer, however, is the Producer, because both the Consumer and the Middle-Man may say from whom he shall buy. While he must sell to him who chooses to trade with him.

It seems, then, the source of most of the trouble is the Producer. What errors in competition are to be found are made by him.

The Producer has FAILED to be FAIR TO HIMSELF. He has NEGLECTED to put his own house in ORDER.

Why not CORRECT the evils, Mr. Producer? Why not place your house in order?

There is a way—an easy way, and it does not lead to the courts or to jail.

Manufacturer of burned clay—you are Producers. You are also complaining of unfair competition.

Why not take the bull by the horns and bring about a sane, conservative system of marketing YOUR products?

In every community you manufacturers should form a local organization for mutual protection. This organization would provide for proper selling methods—regulation of price, publicity campaigns, freight tariffs and all the problems that confront you.

And there need be no fear of the Sherman law, because there is a RIGHT way to do these things and the way is approved by the Supreme Court of the United States.

There is a small book published that tells you how to do these things—especially the regulation of prices. It is called "The New Competition," and was writen by a Mr. Eddy. This book—especially those chapters applying to the Open Price Policy, should be read by every burned clay manufacturer. If you can't secure a copy conveniently it is likely the book department of this magazine can supply you.

WHAT is the OPPORTUNITY for the young man in the clay product industry? Is it WORTH WHILE for a youth of ambition to CONSIDER entering the field? What PROMISE is there for him? What does the FUTURE hold for him? If there ARE opportunities, HOW shall he best equip himself?

These, and other questions of a similar nature, have been put to this journal frequently of late, and it is the purpose of this editorial to answer them.

What is the young man's chance?

Some one has said that "Opportunity comes to him who SEEKS it."

This is unquestionably true, but with LIMITATIONS. We must CREATE opportunity, of course, but the more NARROW the field the LESS CHANCE to make room.

Looking back over the pages of history we find "eras of burned clay" have followed the advance of civilization.

In each of these eras young men have found opportunities.

Today, in America, there is another era upon us. The forests of the pioneer practically have been depleted and man, as history repeats itself, turns to the earth for his home.

In another decade building of lumber will be a luxury afforded by but few.

What greater opportunity, then, is afforded the AMBITIOUS young man than that offered in the clay product industry?

The Nation is yet to be built. Even the centers of population are growing. The great stretches of unsettled territory in the West are to be occupied.

Clay plants MUST BE BUILT to make the clay products to build up this land.

Men MUST run these plants and guide their destinies.

And the clay plants of TODAY will be PIGMIES beside those of TOMORROW.

The opportunities, then, are UNLIMITED. The promise of the future is IMMEASURABLE. In no other industry is there so much offered to the young men of the times.

But he who enters into the field must not go BLINDFOLDED. It takes EXPERIENCE—it takes KNOWLEDGE to enter into ANY business and make a SUCCESS of it.

The clay product industry is no exception.

The young man who wants to make brick for a living must prepare himself with the same fidelity of purpose as he would if he wanted to make automobiles or sewing machines or anything else.

This brings us up to the next question: "How shall I best equip myself?"

There are three methods. One is through the School of Experience. The other is through the School of Ceramics. The third is through both schools.

The wise youth will choose the latter course. The School of Experience is a good one, because it gives him the practical end, but it is a tedious one and not so thorough when depended upon alone.

The School of Ceramics essentially is necessary, because it gives one a SCIENTIFIC training and equips him with KNOWLEDGE he never will learn elsewhere.

Obviously a course in BOTH is BETTER.

The advice of this journal to the ambitious young man is for him to take a four-year course in one of the many schools of ceramics, spending his vacation periods in the clay plant and at work that may soil his hands but add to his store of knowledge.

Having completed this course, the next step would be to enter a MODERN plant as an employe, and not be particular as to what the employment is.

Having learned the THEORETICAL side of the business and been given the principles of clay product manufacture, it is now the time to put what you have learned into PRACTICAL use.

But do not STOP at the manufacturing end.

There is MORE to learn than that.

So map out your plans that you will not only learn the art and the science of successful brickmaking, but also the art and the science of SELLING what you have LEARNED how to make.

Learning how to sell is just as important as learning how to manufacture. A young man thus equipped has OPPORTUNITY, and he needs only to beckon and SUCCESS will come to him.

The concluding advice of this journal is, to enter the clay product industry, but do not do it HALF-PRIMED. Make it as SERIOUS a study as you would the study of medicine if you wanted to take up that profession. Make it as thorough as you would the study of any other line of human endeavor, and you will find an opportunity.

The world is crowded with clayworkers who DO NOT KNOW.

A Man Who is Making History in Brick Paved Roads

Being a Short Sketch of a Consistent Worker for "The Dustless Road" and the Country-wide Use of Paving Brick

Hershel H. Macdonald

Assistant Secretary, National Paving Brick Mfrs. Assn.

A LITTLE more than two years ago the National Paving Brick Manufacturers' Association made Herchel H. Macdonald its assistant secretary, having decided to give the position to an experienced newspaper man. Fresh from the editorial rooms of the Cleveland "Press," he tackled his new job in exactly the same manner as he had covered his newspaper assignments—he set out to "make good."

Publicity is second nature with Macdonald. He has friends in nearly every newspaper office, news association and magazine in the country. He saw a chance to make "paving-brick" a household word and is rapidly accomplishing his purpose. Through illustrated newspaper stories that have popular interest, each having, however, a little "paving-brick" tendency, he has secured untold columns of space that could not have been purchased for tens of thousands of dollars.

When Macdonald was fairly under way in his work in the office of the N. P. B. M. A., he cast about for new members among paving brick manufacturers who were not supporting the association; largely through his efforts the N. P. B. M. A. has nearly succeeded in doubling its membership list. Persistently, tactfully and effectively he got after those who were not up to the scratch with their dues, and regular payments are now the rule, rather than the exception.

Good printing is a hobby with Macdonald and since he has been with the association it has issued a magnificent line of publications boosting brick.

"Mac" was a boy when he entered the newspaper game and rose in the ranks until he became night editor in the San Francisco offices of the Associated Press. He was on duty at the time of the memorable earthquake and fire that laid the Golden Gate city in ruins, and he became prominent at that time by sending East the very first word that was flashed out about the disaster. For four days and nights he worked incessantly until he was able to send out word that the great conflagration had spent itself.

Through the proceeds of his newspaper work Macdonald brought up two sisters and a brother and put them through the common schools, high school and finally the University of California. He is married and has three beautiful children, two boys and a girl.

Macdonald has cooperated with Secretary Will P. Blair of the association until their team work has placed the association in the highest notch of its prosperity. Through their efforts there is now a greater demand for paving brick than has ever been experienced in the history of industry.

One of Macdonald's publicity stunts, carried on through writeups in the magazines and newspapers of the South was instrumental in carrying a $1,000,000 bond issue for a 75-mile brick road leading from Tampa, Florida.

There is no let up to Macdonald's optimism, pepper and energy. He believes that the present extraordinary demand for paving brick will be insignificant, when compared to the demand of future seasons; he believes in the application of modern publicity to a product with merit and a sleepless watch on the quality and service of the commodity to which the publicity motor is attached. So vigilance and publicity are "Mac's" keynotes, sounding in harmony for better fortunes for the brickmen and better streets for the people.

Elbert Hubbard's Philosophy

Will Begin September 1st

IT WILL BE ABOUT THE HABIT OF READING AND DEAL PARTICULARLY WITH THIS AND OTHER TRADE JOURNALS

AS ANNOUNCED in these pages of the August 1 issue, the famous Sage of East Aurora, editor of the "Philistine" and of the "Little Journeys," publisher of de luxe books, maker of Arts and Crafts furniture, keeper of a caravansarie, leader of an industrial colony that is the Mecca of many pilgrims who love beautiful things, will write for "Brick & Clay Record" and give its readers his latest and best word creations.

If you find you have no time to read at the plant, it might be well to have "Brick & Clay Record" sent to your home, and at the same time give "the family" a chance to commune with Fra Elbertus.

IT HAS been said that Elbert Hubbard never writes with a dull pencil, which is a clever way of saying he always writes entertainingly. Some writers grow stale. They lack the fire and the snap of their earlier efforts. They fail to touch the human heart and play on its strings. Elbert Hubbard, however, seems to improve with each succeeding year.

There is a reason for this. Mr. Hubbard always has something to say. His storehouse of knowledge is well-filled. He is never at loss for a subject on which to philosophize. He never has to pause for a theme. He writes of life—of the things about him—of matters that interest you and me.

With the announcement made in these pages in the last issue of this journal that Mr. Hubbard is to write for "Brick and Clay Record" the next twelve months, many have expressed a curiosity as to what he can say that would interest a clayworker.

It is not likely that Mr. Hubbard will seek to tell clayworkers how to make brick or mould clay into pottery, although there have been no restrictions placed on him, and he is at liberty to philosophize on any subject that appeals to him.

But clayworkers may be instructed, interested and entertained by articles that have no bearing on the industry from which they make their bread and butter.

Clayworkers have the same impulses and the same desires that physicians, grocers or any other class of men have and what will be good for one of these will be good for the clayworker.

And, while Mr. Hubbard may not write about clay and its treatment and its manufacture, there are a world of subjects on which he can write and which will be of value to everyone who reads, whether he be a clayworker or engaged in some other work.

The subject which Fra Elbertus discusses in his first article, which is to appear in the Sept. 1 issue, is "The Habit of Reading." He directs his trenchant pen at the clayworker in particular and he sends home some good solid shot.

Most of us do too little reading. Fra Elbertus has an idea that the clayworker is about the worst of all sinners in this regard. You probably will agree with him when you read what he has to say.

The unusual always attracts attention. Stories of the sea appear as feature articles in country-life papers and advertisements of hardware and building materials in fiction magazines. A publication that devotes its pages entirely to items that are supposed to interest but one class of men, or that deals with but one industry, shows a sad lack of insight and a meagre study of psychology, for in these days of mental progress it is no longer "many men of many minds," but many men, each of many minds—we are all "boys at school," learning lessons that were beyond the ken of those who taught us day before yesterday.

Hollow Stands

HOLLOW-TILE never has been given the recognition by the Underwriters it deserves, the insurance companies charging a much higher rate of insurance than its fire-resisting qualities warrant. A test made a few days ago, however, in which three standard types of fire-proof floor arches were used, may force the issue and give a rating nearer what hollow-tile deserves.

This test was made under conditions that were as near what would be found in actual practice as possible and, while all three materials stood the test sufficiently well to satisfy the group of experts, hollow-tile, in view of the adverse circumstances under which it was tested, made a remarkable showing.

The arches were subjected to a temperature of 1,700 degrees for several hours and a stream of water at a pressure of 60 lbs. was then played upon them. In addition to this, a dead load of 140 lbs. was carried during the time the fire-test and subsequent cooling was in progress.

After the arches had cooled, dead loads of 400 to 800 lbs. were placed upon them and were carried without serious fracture.

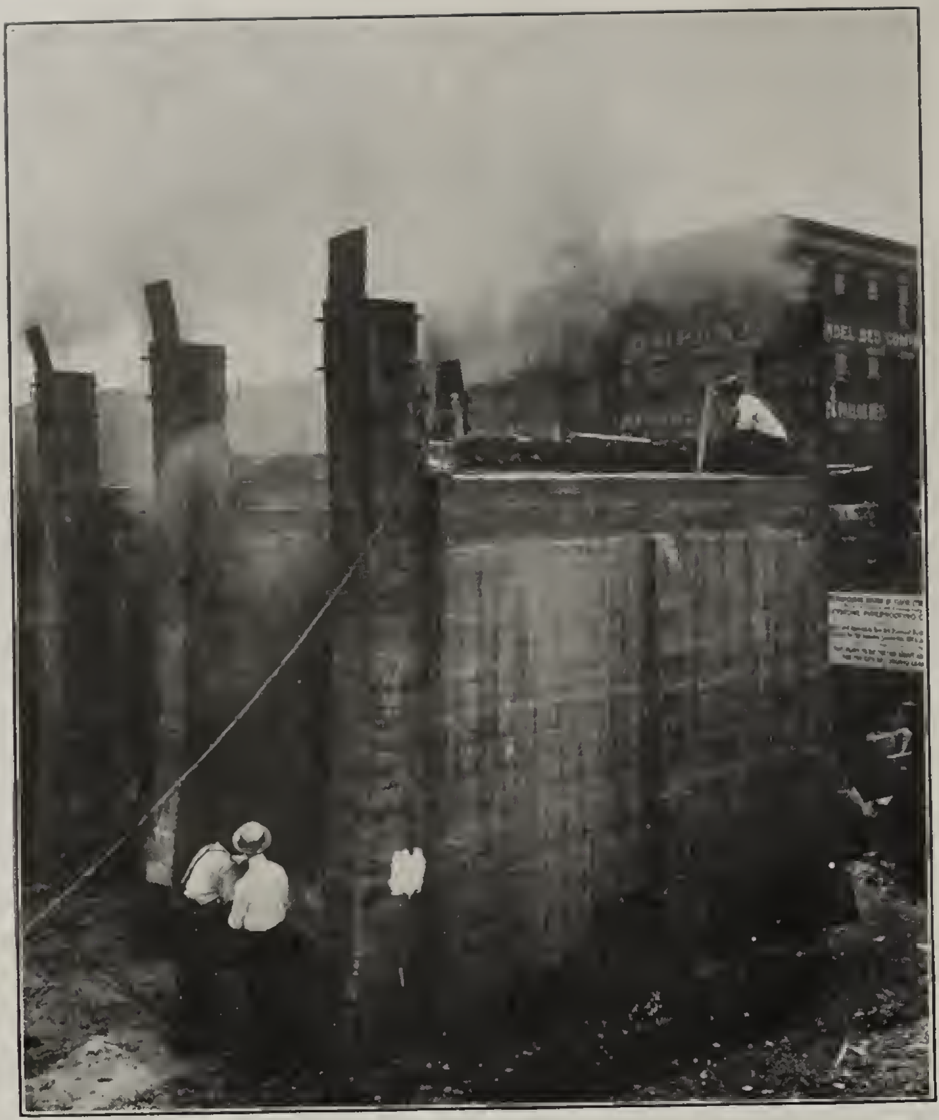


Fig. 1—Starting the Fire. Mr. Perrine Is Shown on the Roof Reading the Electric Pyrometer

IN A competitive test of three standard types of fireproof floor arches, hollow tile made a very creditable showing under somewhat adverse circumstances at the Columbia Fire Testing Station, Greenpoint, Brooklyn, N. Y., on Wednesday, July 30, under the direction of Harold Perrine, C. E., of James F. Macgregor's staff of Columbia University. About two hundred of the leading fireproofing experts of the East spent the entire day at the test, including A. W. Herbst, chairman of the building code committee of the Board of Aldermen, P. H. Bevier, superintendent of construction for the National Fireproofing Company, as well as representatives of Cass Gilbert's and other prominent architect's offices. The results of the test is shown in Plates 1 and 2.

Three panels were erected in the oven shown on Plate 1. Mr. Perrine, who conducted the test, is shown on the roof, reading the electric pyrometer connected by wires with instruments in the adjoining buildings. The pig-iron represents a dead load of 140 pounds. In this furnace a half a cord of furnace wood was piled and soaked with kerosene and the torch was applied, at about eleven o'clock in the forenoon. The illustration shows the furnace just when the firemen were closing the door. Plate 2 is a closer view of the furnace after the fire had reached a registered temperature of 1,700 degrees, when there was a slight deflection noted in the arches, which later was overcome by contraction, when the firemen turned the hose on to the seething spans.

Plate 3 shows the three panels from the roof after 1,700 degrees of heat had been applied for several hours and after they had withstood a hose pressure of sixty pounds to the inch.

All the arches stood the test without failure as shown by the unbroken surface of the pig iron laden roof.

The floor arches consisted of one reinforced gypsum and lathe shavings arch, the product of the United States Gypsum Company, one hollow-block arch, the product of the National Fireproofing Company, and one reinforced cinder-concrete arch, composed of one part of Pennsylvania Portland cement, two parts of Cow Bay sand and five parts of ordinary steam cinders, reinforced in both gypsum and concrete arches by Clinton electrically welded wire.

The test was financed by Albert Oliver, the New York selling-agent of the Clinton Wire Cloth Company, of 101 Park avenue, at a cost of $2,500, and was conducted (and the arches laid up) not in accordance with laboratory practice, but rather in accordance with the formulae and practice used by general contractors in New York City, under the provisions of the existing building code.

This fact was emphasized during the test by P. H. Bevier, who was there as representative of the National Fireproofing Company, and who called attention to the fact that the skewbacks had not perfectly been filled as the building code requires with dry sand or mortar, to give a perfectly uniform leverage against the soffits of the I-beams, when the expansion, caused by the heat, came.

Mr. Oliver contended that complete filling of the interstices between the I-beam and the terra-cotta tile was not general in average building practice, for the reason that a small pebble or many small pebbles falling down between the space that should be filled, would arch the sand or mortar and thus prevent complete filling. The purpose of this test, according to Mr. Oliver, was not designed to reproduce laboratory conditions where theoretically perfect fundamentals would obtain, but rather to demonstrate how the arches would behave

Block Test

THE TEST was financed by a representative of the cement interests and while this gentleman declared he proposed to give rival materials an equal showing with his own, and he did as well as could be expected, certain conditions were imposed upon hollow-tile that placed it at a decided disadvantage.

The skewbacks in the hollow-tile, for instance, were not filled perfectly, in accordance with the Building Code of New York City, which requires that either sand or mortar be used to provide a uniform leverage against the soffits of the I beams when expansion, due to any rise in temperature, might come.

Again, while the cinder-concrete arch, and that built of hollow-tile, were both exposed to a severe and unusually protracted rain storm, which occurred about three days before the test started, leaving them in a condition that would be comparatively impossible in practical construction, the hollow-tile held a much larger proportion of the water than did the cinder-concrete, and, this being considered, made a truly remarkable showing.

The Furnace After the Test in Which a Temperature of 1700 Degrees Was Reached

when laid up in accordance with the practice followed by speculative builders of factory, office and loft-buildings, where the greatest fire menace to the greatest number of persons constantly prevails.

The cinder-concrete and the hollow-tile arches were laid up and allowed to ripen for four weeks. The gypsum block slab was up only two weeks, but the United States Gypsum Company had so much faith in the fire-resisting qualities of its material that it consented to go ahead with the test despite this handicap. In the case of the terra-cotta blocks they were the product of the National Fireproofing Company, purchased on the open market and laid up by Thomas G. Carlin, brother of the Superintendent of the Bureau of Buildings, Borough of Brooklyn, New York City, who also laid up the cinder-concrete arches. The mortar was mixed and the arches set, under the supervision of Mr. Perrine, and the manufacturers of all the material used were invited to be present or be represented at all the preliminary stages of the mixing and construction, to see that conditions were equal.

When asked whether his company had received this invitation Mr. Bevier said that the National Fireproofing Company had been invited to overlook the work of putting up the arches but that no one had done so until after the arches were up. The curing of the arches was hastened by the use of four salamanders, which were allowed to act upon the work for four days. Two days before the test took place one of the heaviest and most prolonged thunder-showers of the season came up and thoroughly drenched the arches, so that during the test the water was forced out through the sides of the furnace in liberal quantities. Mr. Bevier said that under these circumstances hollow-tile would have a very severe strain placed upon it, unless the skewbacks were firmly bedded, because of the well known porosity of terra cotta.

The fire was set at 10:50 in the morning and at 3:50 P. M. a company of the New York Fire Department with fire engine was summoned and water applied when the pyrometer registered slightly over 1,700 degrees.

When the two hundred spectators rushed to the mouth of the furnace to see what the damage had been they saw exactly what is shown in Plates 3 and 4.

Some of the persons present consented to comment upon the test. Some of these expressions follow:

P. H. Bevier, superintendent of construction of the New York Fireproofing Company: "The test in my mind was not entirely conclusive for the reason that the skewbacks were not bedded thoroughly. I am, however, impressed with the sincerity of Mr. Oliver and I do not hesitate to say that in laying up all three arches he conformed to the average ordinary construction-practice of the day. The mere fact that a few blocks gave way under the extraordinarily heavy test does not indicate that the arch failed. Quite on the other hand, the arch apparently stood up exceedingly well, considering the fact that each block had absorbed a great amount of rain-water during the recent storm." This statement was made just after the firemen had cooled off the arches. On the following day, when the 600-pound load-test was applied, the terra-cotta arch took the full 600-pound test, showing that in an actual fire the arches, although fractured in places, would have been sufficiently strong to warrant repairs and be used again. The cinder-concrete arch also stood the full 600-pound test, but in the case of the gypsum arch there was a slight deflection, partly due to the fact that this arch was two weeks younger than the others.

Homer A. Reid, the consulting engineer, said: "The test was eminently fair as far as ordinary building practice is

Fig. 3—Gypsum Arch—Hollow Block.

Fig. 4—Hollow Block—Cinder Concrete.

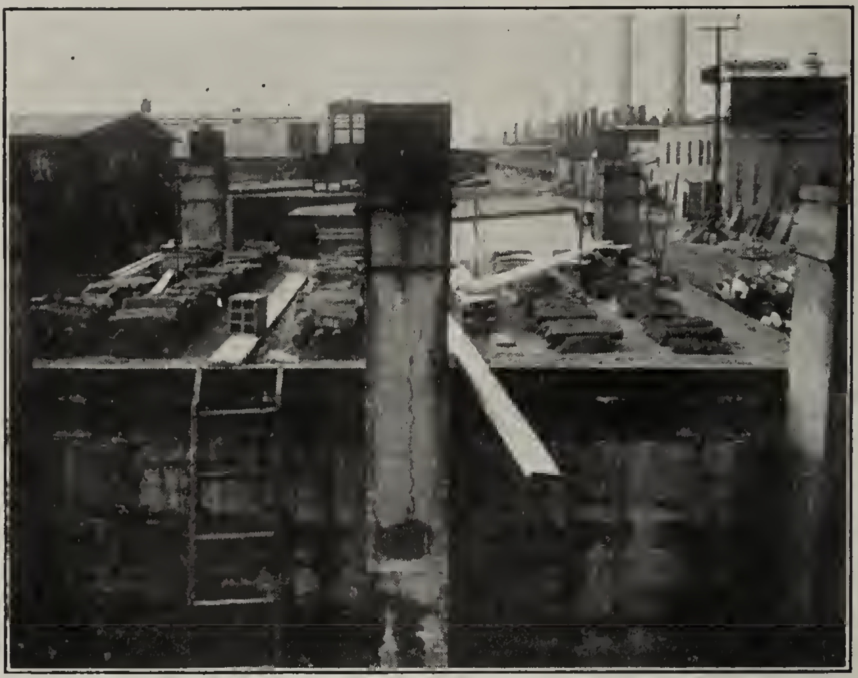


Fig. 5—Top of Arches After Cooling.

concerned. I would not say that an arch failed, because all of them could, in an actual building, be readiliy repaired."

Rudolph P. Miller, superintendent of buildings of New York City, said: "The test was very interesting. It was also very thorough. I also think it was fair."

Chairman A. W. Herbst, of the Building Code Committee: "I am glad Mr. Oliver gave us this test, but I can not say anything about it for publication until I have seen the official report. From what I can see now it looks as though both the hollow-tile and concrete arches had merit sufficient to warrant unrestrained use in fireproof buildings."

Albert Oliver, who financed and aranged for the test, said: "I know that I have been absolutely fair. I have tried to duplicate actual building practice. I am ready to stand or fall on the report of Mr. Perrine and I am sure that when that report is received, judging from observations made of the behavior of these slabs when we put the heavy load test on them, that all are good. I wanted to prove that concrete can stand as heavy a fire-test and as heavy a subsequent load as terra-cotta block, providing good reinforcement is used, and I feel that I have accomplished that which I set out to do. I did not arrange this test to put a black eye on the hollow-tile block and to cause it to be eliminated entirely from the building code. I conducted this test to show that cinder-concrete when properly reinforced, and properly made, is as good as terra-cotta block when laid up with a one-to-four or one-to-five mixture. This test will show that I was right.

"I want to say that the behavior of gypsum under the test was remarkably good. I have no animus against any of the competitive materials whatever. All I wanted to demonstrate was that the code committee should not legislate in favor of one to the elimination of the other. The average builder in New York City wants a square deal. He does not want to be dictated to regarding the kind of arch he shall put up nor the price he shall pay for such an arch. He wants to have a selection and he wants freedom in making that selection, but he has been in doubt (due to biased opinion voiced by one side or the other) regarding which was the positively fireproof material, reinforced-concrete, gypsum or hollow-tile. Now he knows all are; also the Board of Aldermen now know, and therefore I am gratified and satisfied with the results of this test."

Summing up, hollow tile stood the test remarkably well, and, in view of the adverse circumstances under which it was forced to take part in the competition, it showed to splendid advantage as a fireproof, load-bearing material for building construction.

The New York representative of "Brick and Clay Record," Allen Beals, was present at the test and made a careful examination of the hollow tile after the experiment was closed. "Only five blocks were fractured and these were on the lower webs," he writes. "Three were fractured internally

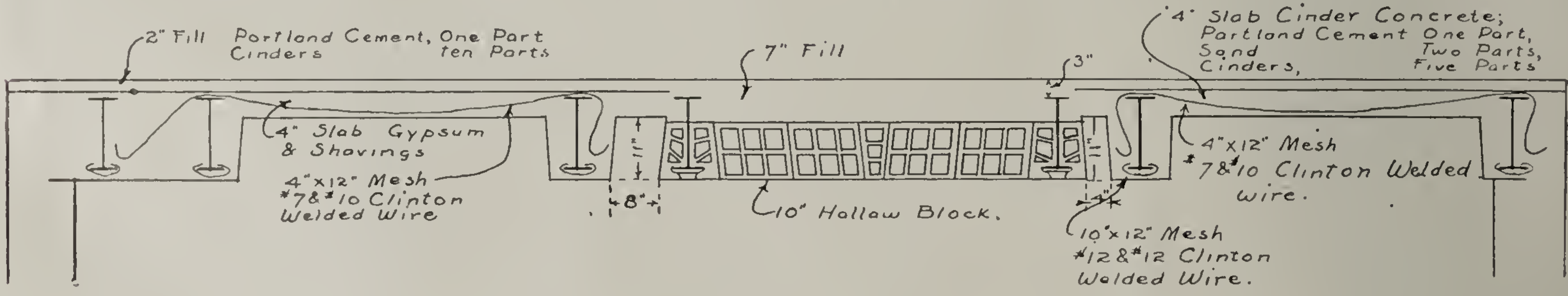

2" Fill
Portland Cement, One Part
Cinders ten Parts
7" Fill
3"
4" Slab Cinder Concrete;
Portland Cement One Part,
Sand Two Parts,
Cinders, Five Parts
4" Slab Gypsum & Shavings
4"x12" Mesh #7&#10 Clinton Welded Wire
8"
10" Hollow Block.
4"x12" Mesh #7&#10 Clinton Welded wire.
10"x12" Mesh #12&#12 Clinton Welded Wire.

Fig. 6—Detail of Arch Construction.

and, therefore, would have to be replaced, but in spite of this weakness, Mr. Oliver admitted to me that the hollow block stood as heavy a load after the fire as the concrete arch did. The figures, as a matter of fact, are as follows: Gypsum took only 400 lbs., while hollow block and concrete-cinder actually took 800 lbs. each, and this after several hours of heat at 1,700 degrees, and the shock of 60 lbs. of water."

It is significant, however, that hollow tile was handicapped by being soaked in a heavy rain a day or so before the test. This material is not burned with any idea of being impervous to water as it is intended entirely for interior construction. A vitrified tile would have escaped this handicap.

It is significant also that the hollow tile used was bought on the open market by Mr. Oliver and therefore represents the average material, while both the gypsum and concrete were mixed in accordance with the No. 1 specifications for this work which rarely is followed by contractors who easily can skimp on their work through the very nature of it, giving inferior material when first class construction is paid for.

Even the most radical advocate of burned clay as a building material never questions the value of concrete when properly mixed It is the opportunity the material gives for grafting by making an inferior mixture without detection that has made concrete an unsafe building material, and the numerous concrete failures are mute evidences of this fact because there is no way to tell whether the work has been slighted until after the material is in the wall and placed to the test of actual usage With hollow tile, however, inferior product may be detected before it is placed in the wall and danger eliminated

The official report of Mr. Perrine yet to come, is awaited with interest.

Brick Palace Houses Policemen

Housed in a palatial fire-proof brick structure that more resembles the home of a multi-millionaire than it does that of the blue-coated, brass-buttoned guardians of the peace, the policemen attached to the Northern station of Baltimore, Md., are the envy of their fellow-patrolmen the country over.

This example of the last word in police stations is equipped with a garage for the numerous department autos; a stable where half a hundred horses are housed and a paddock in which to give them exercise; a magnificent garden and a splendid veranda that looks out on the garden and a courtyard.

Brick is everywhere. The flooring, the paving, as well as the walls and cornices all are of brick. It might be taken as one of the best examples of brick architecture in a city whose homes practically all are built of clay products.

Is it any wonder that these guardians of the peace are the happiest of their kind? It is their proud belief that the station is the finest in the country, and while there may be other cities which dispute this somewhat ambitious claim, certain it is that the "Northern" is one of the handsomest structures of its kind ever erected. And, as was quite natural under the circumstances, the architect chose brick as the medium best suited for the evolution of the best police station of his day.

A wave of city street improvement is sweeping Nebraska, and more pavement is being laid this year, it is said, than has been done in any year in the history of the state. The work is characterized by careful consideration of the uses to which the various streets are put, brick being used in the business districts and asphalt in the residential portions of the various municipalities. The large amounts thus being spent in civic improvements is said to reflect the prosperity that is filling the state with automobiles, for the two, in a way, go together.

An idea of the amount of work that is either under way, or that has been completed recently, can be gained from the following rather extensive jobs:

Fremont, brick pavement in amount of $50,000 to $60,000.

Norfolk, asphaltic-concrete pavement in amount of $90,000 to $100,000.

Falls City, vertical fiber pavement costing about $56,000.

Beatrice, additional brick pavement costing about $60,000.

University Place, brick pavement costing $36,000.

Hastings, brick pavement costing $16,000.

Others will be done later. David City has taken bids on paving that will cost that city about $75,000 and Grand Island is also about to expend close to $80,000 for the same purpose. North Platte, Geneva and Superior are figuring on paving some of their principal streets, but have not definitely decided to do the work until later in the summer.

To meet the imperative immediate needs for definite specifications, until Committees C-4 and C-6 of the American Society for Testing Materials can complete their reports, a committee appointed for the purpose reported to the Iowa State Drainage Association at its meeting held February 13, 1913, at Fort Dodge, Iowa. They recommended tentative Standard Specifications for drain-tile, sewer-pipe and for the laying of same, which were adopted by the Iowa State Drainage Assn. and a bulletin has been published by the Engineering Experimental Station, at Ames, Iowa, giving the specifications, etc. Extracts from this report are given in this issue of "Brick & Clay Record" in the Sewer Pipe Department, but manufacturers interested in drain-tile will do well to write to Director A. Marston, Ames, Iowa, who will furnish copies of the report and the recommended specifications, gratis.

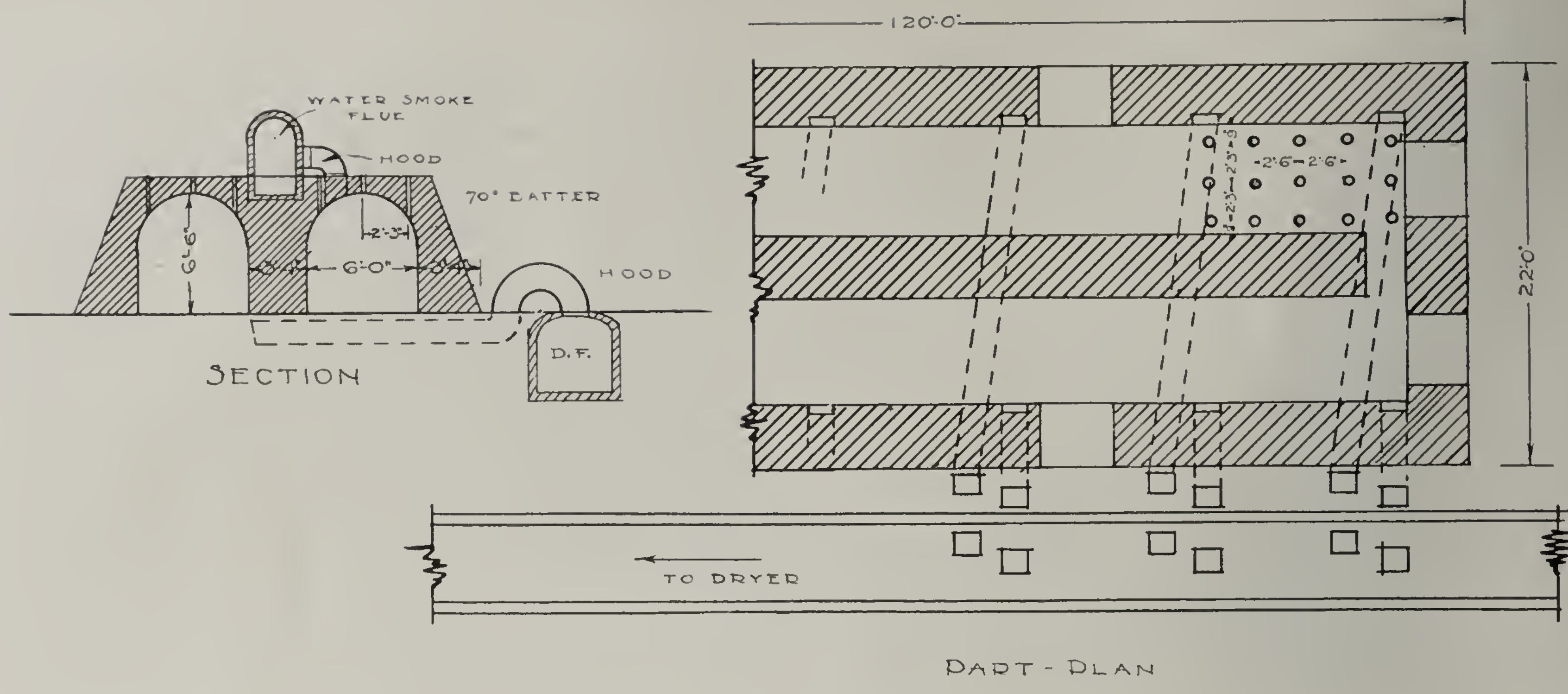


FIGURE. NO 1

A Small Compartment Kiln, for Round Hollow-Ware, Such as Drain Tile. This Kiln Will Also Burn Any Material That May Be Burned in the Ordinary Down-Draft Kiln. It Uses a Cheap Grade of Coal and can be Built for Less Than $3,000.

Cheap Continuous Kilns

TWO TYPES THAT CAN BE BUILT FOR LESS THAN THREE THOUSAND DOLLARS EACH

IN THE "Questions and Answers" department of this journal, issue of Feb. 1, 1913, "50-Illinois" asked how a small, continuous kiln could be built. Later—in the April 15 issue, another correspondent—"68-California" asked practically the same question. Still later, "82-California" asked for information along the same lines.

We are glad, therefore, to be able to print the following letter, from William A. Butler, of 4010 Fulton Street, San Francisco, Cal., a kiln expert who has already written several interesting articles for "Brick & Clay Record":

"To build a small continuous kiln that will burn brick, square hollow ware or roofing-tile successfully, and build it for less than $3,000, is not a hard problem for a good kiln builder. The oblong, endless-tunnel kiln will burn the clay products mentioned to perfection, or nearly so, with from 200 to 300 lbs. of coal per thousand burned brick—hollow block and tile in proportion to the amount of clay contained in them.

"But if round tile, drain tile or similarly shaped material are to be burned, a small compartment kiln will prove the better investment.

"Figure 1 shows the plan and section of a small continuous kiln equipped with fan draft and water-smoking system. The inside dimensions are 6 ft. wide, 6 ft. 6 ins. high, the height of the spring line above floor 4 ft. and the rise of the arch 2 ft. 6 ins. The length of the tunnel will be 112 ft. on each side—a total of 224 ft. The outside dimensions are 22 ft. by 120 ft.

"The fire will travel at the rate of not less than 150 ft. per week and the stack or exit gases can be used in a radiation drier; that is, in a drier in which the gases do not come into direct contact with the drying clayware.

"Figure 2 shows a small compartment kiln in which round hollow-ware, such as drain-tile and all like materials are burned, as well as any kind of clay-ware that may be burned in the down draft kiln. The compartment as well as the tunnel kiln is planned for direct firing with a cheaper grade of coal than is used in up and down draft kilns.

"With the endless-tunnel kiln the coal is dropped into and among the bricks at intervals of twenty minutes.

"In the compartment kiln the fuel is burned in furnaces behind a flash wall, the air of combustion passing through the just burned compartment into the furnaces at about 1500 degrees F.

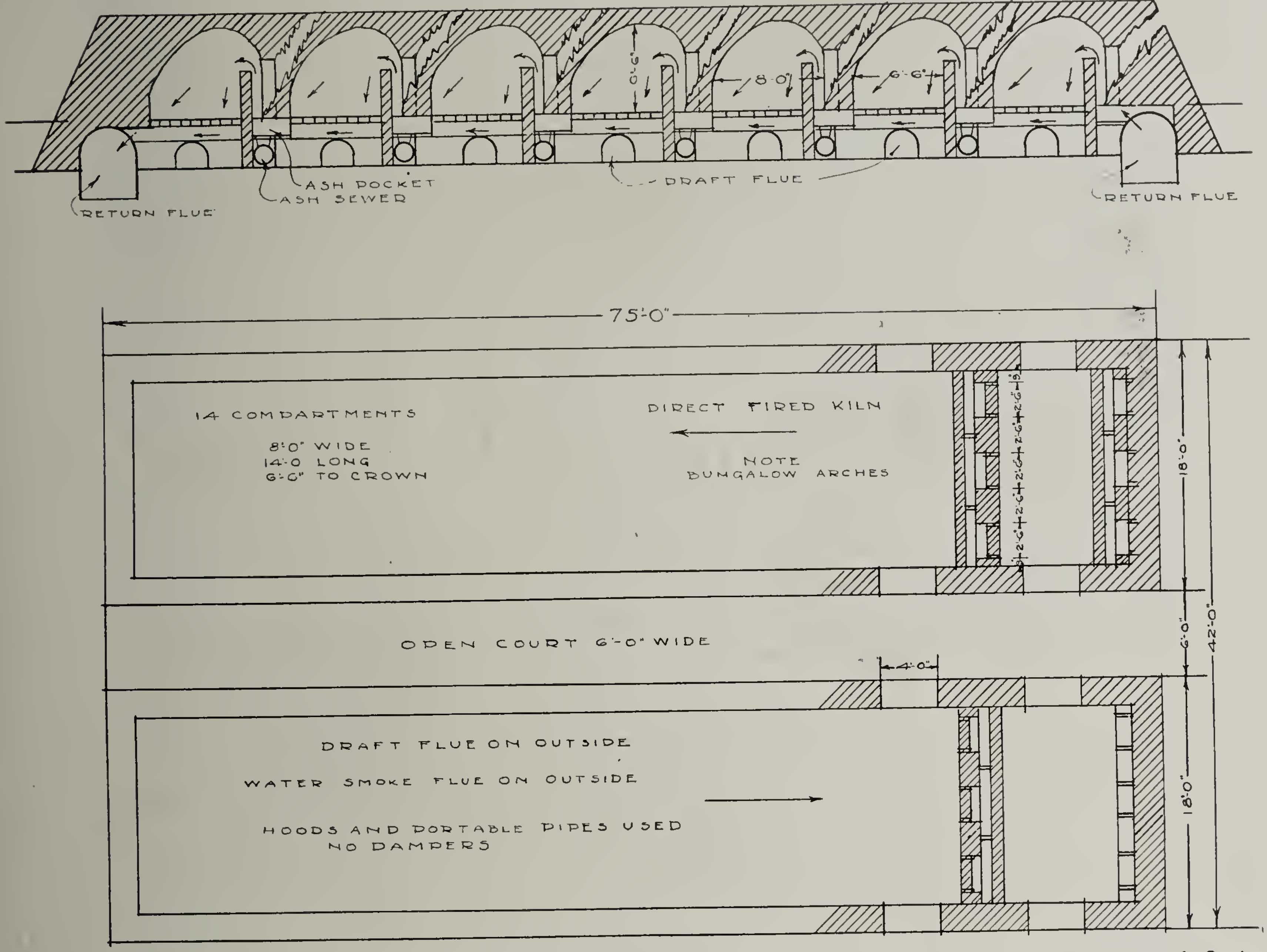
"The principle involved in the fan-draft system is a constant draft with no loss of time or fuel from slight changes in weather conditions and the withdrawing of the surplus heat in back of the fire, which holds back the entering air, and also the heating up of the just set bricks before the advance of the fire.

"This method will increase the ordinary Hoffman Kiln from 30 to 100 per cent according to the degree of efficiency at which the kiln burns."

In publishing the letter above, "Brick & Clay Record" believes it only fair to its readers to state that no attempt has been made to check up the figures, either as to cost or to coal consumption. Mr. Butler is, however, a recognized authority on kiln building and operation, and gives us to understand that he has erected kilns of both types, well within the specified cost, and that these kilns are in successful operation, fuel consumption figures being taken from records made during ordinary conditions of burning. This explanation is made on account of the many different opinions that exist in the minds of expert kiln builders, as to the relative merit of the various types of kiln, in the first place, and then to the possibility of building any type for the figures that are sometimes given. Building costs vary in every kind of structure, be it a sixty-story skyscraper or a small down-draft kiln. Labor costs, the accessibility of constructional material, superintendence and design have equal bearings on the question. Whether Mr. Butler was working under favorable or unfavorable conditions in the kilns he has built will have much to do in the analysis of his figures.

The same may be said of fuel consumption. It is a fact that kilns of the type here illustrated use a low grade of coal, and in that fact alone, there is a considerable saving. How low a grade has much to do with the amount used, as has the character of the ware that is being burned.

FIGURE No. 2



A Small Continuous Kiln That Will Burn Brick, Square Hollow-Ware or Roofing-Tile, Using from 200 to 300 Lbs. of Coal per Thousand Brick or Equivalent In Other Clay Wares. It Can be Built for Less Than $3,000.

Advance Notes on American Road Congress

"National Aid" and "National Highways" will engage the attention of the delegates to the American Road Congress during one session of the six which will be held at Detroit, Mich., during the week of Sept. 29th. It is expected that ex-senator Jonathan Bourne, Jr., chairman of the Joint Committee on Federal Aid in the Construction of Post Roads, will place before the congress his plan for lending the credit of the national government to the states through the ultimate issuance of a billion dollars of good roads bonds. Senator Swanson, of Virginia, also a member of the Joint Committee, will explain his plan for an annual cash appropriation conditioned upon equal appropriation by the states and an equal division of responsibility for construction and maintenance.

The Shackleford plan, given great prominence by Hon. D. W. Shackleford, the chairman of the Good Roads Committee of the United States House of Representatives, also will be explained to the good roads delegates. Mr. Shackleford's plan provides for a system of rewards on all rural delivery roads meeting certain requirements. Differing from all of these schemes is that which provides for a system of national highways built and maintained entirely at cost of the national government. A champion of this plan will be heard.

After the presentation of the various schemes now advocated for adoption by the government, discussions will be had and an endeavor made to harmonize differences and bring about the announcement of a definite policy for submission to the Congress of the United States by the American Road Congress. As a majority in both the Senate and the House of Representatives favor some form of government aid it is important that this great national gathering of good roads workers should take definite action.

Engineering Record Indorses Wire-Cut-Lug Block

FRANK B. DUNN
The Man Who Has Revolutionized the Manufacture of Paving Block and Drawn the Indorsement of the Engineering Experts.

World's Foremost Journal in Its Field Makes Unsolicited Investigation of its Merit and Recommends It as Ideal Pavement

ONE of the most remarkable, unqualified indorsements of a manufactured product ever made appeared in the July 12, 1913, issue of the "Engineering Record." The wire-cut-lug paving block, made under the Dunn patents, were given approval after unbiased investigation by F. B. Marsh, assistant designing engineer of the Board of Water Supply, New York City, and declared both by Mr. Marsh and by the editor of the "Record" as the ideal paving material.

Mr. Marsh was engaged for the investigation because of his intimate and authentic knowledge of the subject gained by a similar inquiry made for the Board of Water Supply in connection with the 40-mile roadway to be built to the Ashokan reservoir, New York City's new $80,000,000 water supply system.

During this investigation Mr. Marsh and his engineering staff analyzed every known type of highway construction, its cost, its maintenance and its permanency. After several months of exhaustive research, his report was made and it carried with it a recommendation to the Board the use of wire-cut-lug paving block with cement filler—declaring it to be the best and most lasting material. These block were recommended for the entire roadway which is to cost, approximately, $1,500,000.

Mr. Marsh, in the article that appeared in the "Engineering Record," tells why he and his engineers recommended the wire-cut-lug block and it is gratifying to "Brick and Clay Record" to see such an eminent authority on engineering matters as the "Engineering Record" editorially indorse Mr. Marsh's views.

This journal was one of the first to recognize the merits of the wire-cut-lug block and openly advocated it at a time when many of the readers were free with their criticisms.

The following is Mr. Marsh's article exactly as it appeared in the "Engineering Record." It might be added that neither Mr. Dunn or any of his associates were aware of the investigation until after it had been made and would not have known of it until its publication had not the editor written for some photographs with which to illustrate the article.

By F. B. Marsh

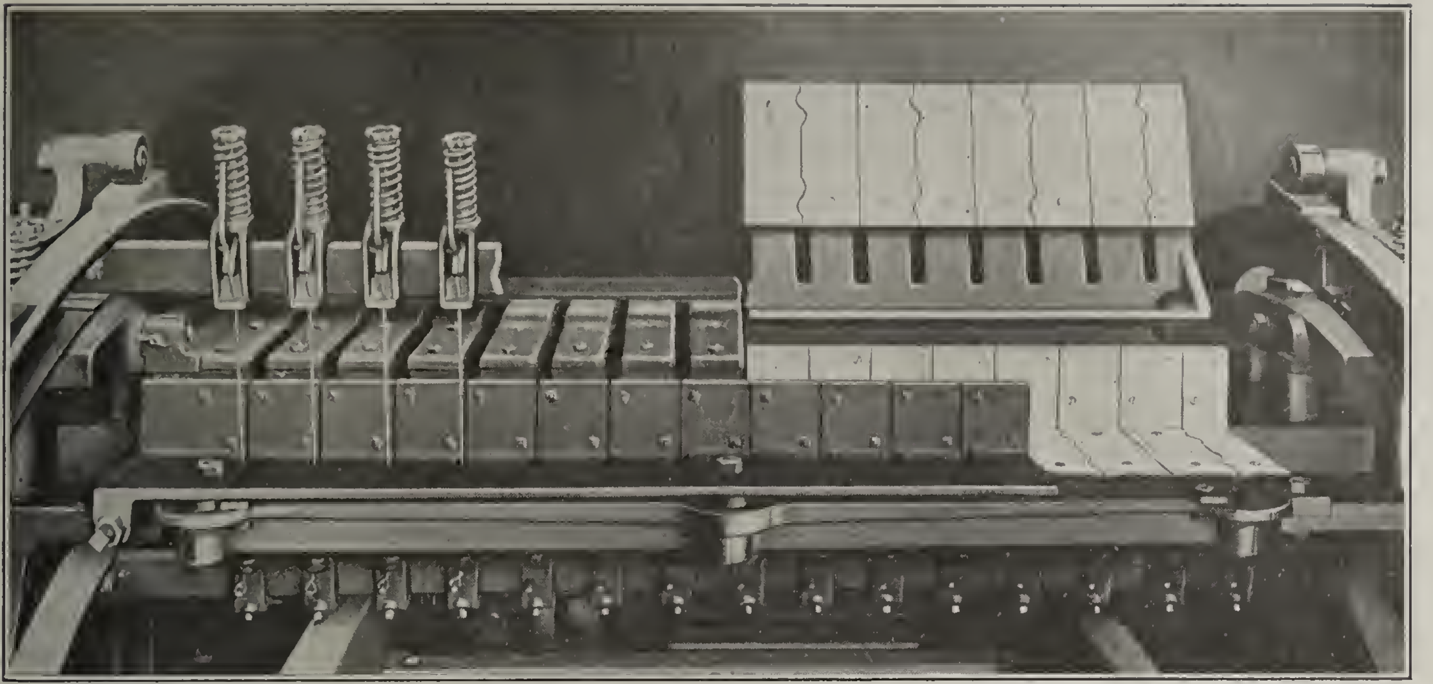
Assistant Designing Engineer of the Board of Water Supply, New York City

THE rapid increase in the use of motor vehicles in recent years, not only for pleasure but increasingly for general trucking and business purposes in city and country alike, makes a well-built brick pavement peculiarly attractive financially as well as in other particulars, for it is reasonable to assume that a modern brick pavement, relieved of much of the shock and grinding of iron-bound traffic, will materially outlast the brick pavements of 20 years ago, many of which are still in satisfactory condition, though practically nothing has been spent on them for repairs.

These earlier pavements were laid with bricks of the small or "brick" size as distinguished from the modern or "block" size, the quality of the raw material was often poor and the methods of burning crude; there was no standard method of testing, and the importance of apparently minor details in laying the pavement was not fully appreciated. One after another these conditions have been remedied. Still another forward step has now been taken in the perfection of a machine for turning out what are termed wire-cut-lug blocks as distinguished from the repressed variety.

In making the repressed blocks the plastic clay or ground-up shale is forced under high pressure through a rectangular die, forming a thick ribbon of the material, which is then cut crossways by wires into blocks. These are then put into molds slightly larger than the block in section, and a powerful plunger is then brought down to do the repressing, as it is called. The purpose of this repressing is to form lugs and grooves in what will be the sides of the block, so that when laid in the pavement there will be space enough between adjacent blocks to admit the filler freely to the bottom of the joint and thus bond the blocks into a monolithic pavement. After repressing they are sent to the dryer and finally burned in the kiln. Repressed blocks are made with rounded or beveled edges because it is impracticable with the repressing process to form satisfactory square edges.

In making the wire-cut-lug block the necessity for the repressing is eliminated by so guiding the wires that cut the blocks from the ribbon of plastic clay that



Machine for Cutting Wire-Cut-Lug Block.

Parts of the platen are broken away to show the shape of the slots which guide the cutting wires. The column of clay, 9½ in. wide and 4½ in. high, passes through the platen to the left end when the cutter is automatically set in motion and the wire frame travels across and through the column, cutting it into fourteen blocks. The slots in the platen have offsets, which deflect the wires, thus forming lugs and grooves. The cutter is mounted on a carriage and travels with the column of clay, which is a continuously moving column, while the cut is being made. When the wires clear the column the carriage returns toward the auger for another cut. The top platen is raised while the cutter is returning.

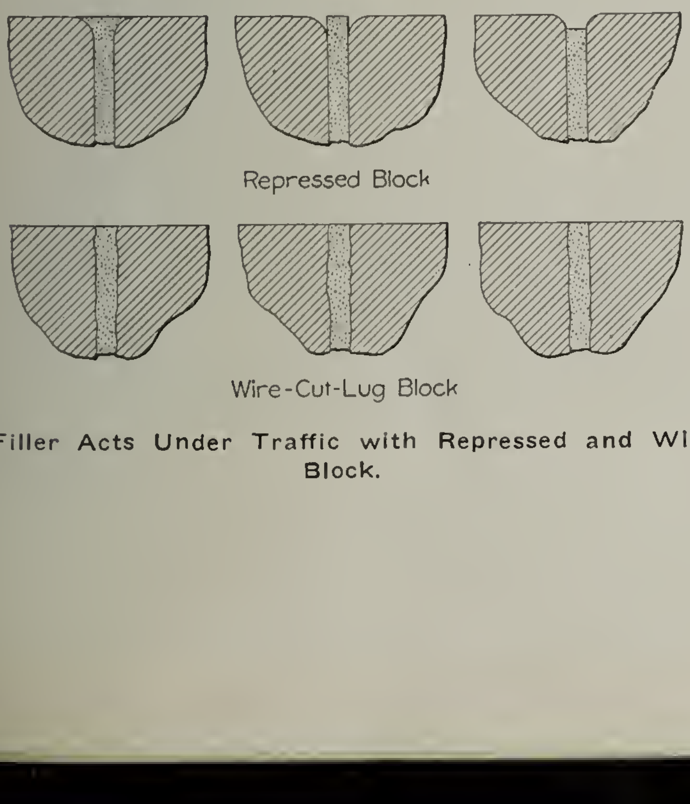
lugs of any desired dimensions are accurately formed without repressing, and the block itself is left with square and true edges.

After some two or three years' experience with the wire-cut-lug blocks there seems to be no question but that they are superior to repressed blocks made from the same raw material. While their manufacture requires the use of a patented machine, any reputable manufacturer can readily arrange to use it, and the royalty charged is about equal to the cost of the repressing process, so that large brickmakers who have installed the new process and still retain the other declare that as far as cost is concerned it is immaterial to them which type of block is turned out.

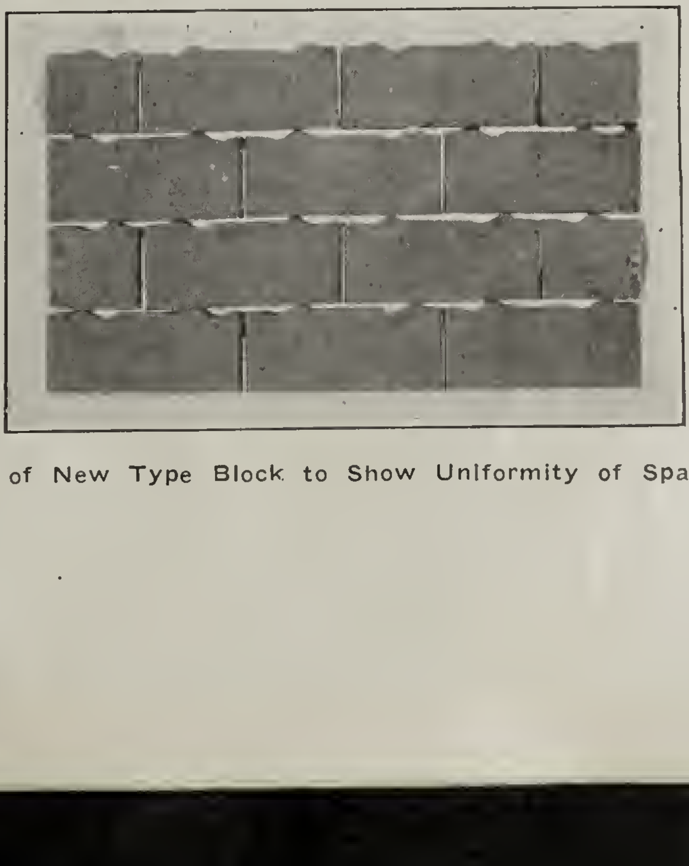
The principal advantages of the wire-cut-lug block are: (1) The elimination of the repressing process apparently results in brick of better quality and texture; (2) the square edges make a smoother and better pavement than the round edges of the repressed block; (3) the rough, wire-cut side surfaces and the uniformity of the lugs give the best possible opportunity for the filler to make a strong, monolithic pavement.

The repressing of the ordinary paving block is claimed by the advocates of the new type to increase, if anything, its volume and therefore to decrease its density. This may not be strictly true in all cases, but it is evident that the re-forming of the somewhat plastic but yet stiff clay to dimensions all of which are materially different from those of the block as left by the cutter not only tends to produce the alleged result but may accentuate any incipient laminations or planes of weakness in the block. Examination of the fractures of blocks of the two types seems to indicate that this is at least occasionally true.

The principal test of quality, however, and the one on which acceptance or rejection generally depends, is the combined impact and abrasion of the standard rattler. Brick manufacturers who make both the repressed and the wire-cut-lug blocks state that the latter passes the rattler test with no greater loss than the other. Its superiority is therefore evident, for if the two were of exactly the same quality, the sharp edges of the wire-cut block would cause it to show the greater loss. This fact deserves more attention from engineers than it has apparently had, for unless it be the definite intention to make the specifications more stringent as regards the rattler test—and except for particularly severe traffic conditions such of course is not only unnecessary but decidedly questionable—it is only logical to permit a slightly greater loss in the rattler for a square-edged block than for a round-edged one. To determine what this difference should be it is necessary to conduct a thorough series of tests on blocks of the two kinds, made from the same batch



How Filler Acts Under Traffic with Repressed and Wire-Cut Block.



Pile of New Type Block to Show Uniformity of Spacing.

> of clay, ground, manipulated, dried, burned and cooled under identical conditions, all to be under the supervision of a recognized impartial authority on paving brick. Such tests might well be made by the committee on specifications for brick of the American Society for Testing Materials in conjunction with the National Paving Brick Manufacturers' Association.
>
> The square edges of the wire-cut-lug block make a smoother pavement than the round edges of the repressed block because the filler can readily be poured flush with the top of the pavement and does not break away at the surface under traffic as it often does from the round edges of the other. This is of particular importance where there is considerable iron-shod traffic, because the slight transverse depressions caused by this process tend gradually to increase in depth and width. Of course, on steep grades it is desirable to use blocks that are slightly beveled on one edge, to give better foothold. Such blocks can be readily formed in the wire-cut-lug machine.
>
> The uniformity of the lugs of the wire-cut block assures not only a uniform space for the filler between adjacent blocks but makes it somewhat easier to lay them so as to get good alignment of the courses across the pavement. With the repressed blocks the lugs are occasionally poorly formed or damaged. Moreover, the smoother surface of the repressed block is not as satisfactory for the filler to adhere to as the rougher, wire-cut surface of the other, whether the filler be cement grout or asphalt.
>
> Of course, if a satisfactory method could be devised for properly spacing the blocks in the pavement a plain wire-cut block without lugs, such as was used in many of the older brick pavements, would be as good as anything; but experience has shown the necessity for limiting this joint space closely, say between 3/16 and ⅜ in., so that there will be width enough to admit the filler freely for the full depth and yet not result in too thick a filler.

At the close of Mr. Marsh's article the following explanation was given by the editor of the "Engineering Record":

> After the receipt of Mr. Marsh's article certain particulars as to the most recent modification of the wire-cut-lug block were received by the "Engineering Record" from the Dunn Wire-Cut-Lug Brick Company, of Conneaut, Ohio. Whereas in the original type each brick had lugs on one side and corresponding depressions on the other, in the latest type each brick has one flat side, the lugs and the depressions being both on one side. The reason for this is readily seen in the accompanying illustration of the cutter.
>
> The particular advantage of this type of block is that with one perfectly flat side it insures against the possibility of laying them irregularly as to the direction of the lugs. Obviously in order to insure proper spacing the blocks must be laid with the lugs in one direction. It was found difficult to get ordinary laborers to distinguish between the lug and the groove sides of the older type, but with both lugs and grooves on the one side no difficulty is found.

In the editorial columns of the same issue of the "Record" there appeared the following editorial reference to the wire cut-lug block:

> Within the last three years those who have followed the brick-paving industry have seen a strong movement to return to a type of brick used years ago and abandoned because of an accidental rather than intrinsic defect. The wire-cut block, originally used, was superseded because of the difficulty of securing uniform spacing in the pavement, and repression was adopted principally for the purpose of forming the spacing lugs. With the advent of a block having wire-cut lugs the former advantages of the repressed type have largely disappeared, while its disadvantages have been thrown into relief.
>
> As the situation was expressed by an engineer who after a thorough study recently specified wire-cut-lug blocks for a large job, the very logic of the new type, aside from any actual experience in the road, is in its favor. The repressing adds nothing of real value except the lugs. These can now be formed, and with absolute uniformity, on the wire-cut block, while the square corners and the rough sides are advantages not found in the repressed type. At the same time the intensification of the laminations, an accompaniment to a greater or less extent of repressing, is avoided.
>
> Tests of the new blocks in service have so far borne out the theoretical considerations, but the results in the rattler, while reported to be not less favorable to

Highway near Buffalo, N. Y., Paved with Wire-Cut-Lug Block.

Wm. C. Perkins, M. Am. Soc. C. E.

Frank T. Townsend, C. E.

William T. Blackburn.

the wire-cut than to the repressed blocks, warrant more careful study. It is worthy of note that although the use of the new brick has increased rapidly since it was introduced three years ago, no special provisions as to abrasion allowance for either wire-cut or repressed brick are included in the tentative specifications offered for consideration by the committee on specifications for brick of the American Society for Testing Materials at Atlantic City last month. It would seem that the matter is worthy the consideration of the committee, if it has not already received attention.

The present status of the wire-cut block is indicated by the fact that one-third of the manufacturers of paving brick, producing 53 per cent of the total output, are now equipped to manufacture the wire-cut product, and it is estimated that about one-sixth of the present yardage is of the new type. The increase in its use should be rapid, but will naturally be checked by the inertia experienced in changing from any well-intrenched product. This is particularly true when laymen (who frequently pass on paving material) are to choose between a rough, apparently carelessly made article, whose intrinsic merits are not shown by surface indications, and a smooth, attractive material. It is in this situation that engineers, fortified by investigations as to intrinsic value, need to exercise their influence.

Dunn Maintains His Own Engineering Staff

The frequency of the appearance of articles in municipal and engineering journals similar to the one quoted in the preceding pages, is an indication of the vastness of the industry which the Dunn Wire-Cut-Lug Brick Company has developed within the short space of less than three years.

Beginning in 1911 with only two or three licensees Mr. Dunn has licensed 15 of the largest paving brick manufacturers of the country to make his block and these are now turning an annual output of 300,000,000 into the wire-cut-lug block. There are several other large manufacturers considering closing contracts and it is safe to say that before five years have passed since the introduction of the Dunn patents, the wire-cut-lug block will be the universal paver.

To handle such a business Mr. Dunn has drawn around him a wonderful organization. The engineering department of his company gives an idea with what care he has selected the members of this organization.

The engineering department is conducted for the purpose of co-operating with engineers, city, county and state and other officials to insure the best possible construction of all vitrified brick pavements, especially where wire-cut-lug blocks are used. At the same time this department has already assisted very materially in many places in getting proper construction where repressed blocks were used.

W. C. Perkins, M. Am. Soc. C. E., is chief engineer of this department. He is a graduate of Lehigh University, has served about seven years with the Fairmount Park Commission in the City of Philadelphia and was with the New York State Highway Department about six years, resigning as resident engineer of Niagara and Orleans counties Feb. 1, 1913, to accept this position with the Dunn Wire-Cut-Lug Brick Company. He was in direct charge as resident engineer of Erie County for several years prior to being transfered to Niagara and Orleans counties and under his direct supervision the best roads of all types in Western New York were built. It was as a direct result of the excellent brick roads in Erie, Niagara and Orleans counties built by Mr. Perkins that the attention of the Dunn Wire-Cut-Lug Brick Company was attracted and resulted in his connection with them.

Frank T. Townsend, a graduate of the Rensselaer Polytechnic Institute of Troy, N. Y., is assistant to Mr. Perkins. He was also for several years with the New York State Highway Department and in direct charge of construction of many miles of brick roads built under Mr. Perkins' administration.

W. T. Blackburn, of Paris, Ill., is consulting engineer to the Dunn Wire-Cut-Lug Brick Company and his services are most valuable due to his long experience in the construction of the best brick pavements in the Central West. He is considered the highest authority on the construction of brick pavements in the United States. The famous Indianapolis Motor Speedway was built under his direct supervision.

It will be noted that the Dunn Wire-Cut-Lug Brick Company has been fortunate in securing the services of engineers, who in every case, have shown exceptional ability in the construction of vitrified brick pavements, and it will also be noted that the best authorities have recognized the merit of the wire-cut-lug block in obtaining the best construction possible.

It was due directly to Mr. Blackburn's recommendation that the reputable manufacturers of Illinois and Indiana took up the manufacture of wire-cut-lug blocks and this was followed by the best Ohio manufacturers.

It already has been the privilege of the Dunn engineers to consult with and co-operate with the city engineering departments of Baltimore, Md., Philadelphia, Penn., Albany, N. Y., Cleveland, Columbus and Cincinnati, Ohio, Louisville, Ky., Minneapolis and St. Paul, Minn., several state highway departments, the Office of Public Roads of the United States Department of Agriculture and many other officials, as well as officials in numerous smaller cities.

The first wire-cut-lug blocks were laid in Baltimore in February, 1913, under the direct supervision of Mr. Perkins with the result that several million wire-cut-lug blocks are to be used in Baltimore this year.

The Dunn Wire-Cut-Lug Brick Company also has given much attention to the manufacturing end of the wire-cut-lug block. H. H. Smith has been in direct charge of this work and has worked out many details of considerable importance to the manufacturer. Mr. Smith was especially fitted for this work by reason of having served more than 15 years as erecting mechanic and trouble man for one of the largest manufacturers of clay working machinery. He has solved many of the troubles of the manufacturers in every state of the Union.

The first cutter for making wire-cut-lug blocks was built for the Dunn Company by E. M. Freese & Co., Galion, Ohio, and its excellent reputation and recognized ability in putting out only the very best clay working machinery for the past thirty or forty years, has been of much benefit in working out many of the details of this cutter.

In the reprinted article by Mr. Marsh given on another page a reproduction of a cut from the "Engineering Record" is shown. It is of the new type of Dunn block just placed on the market. The improved design has one straight side and both the grooves and lugs on the opposite side. It has many advantages over the original wire-cut-lug blocks which had two lugs on one side and corresponding grooves on the opposite side. Some of these are:

First, the new type of block with one straight side insures against any possiblity of laying them irregularly as to the direction of the lugs. Obviously, in order to insure proper spacing, the blocks must be laid with the lugs in one direction. In certain work in which the new block already has been used, it has been found that the most ordinary laborer would of his own accord, see that every block was laid with the lugs in the proper direction as any one block laid improperly is so noticeable that it will attract immediate attention.

Second, it has been found possible in the new type of platen to deflect the wire with the top platen in one direction while the wire was deflected in the opposite direction with the bottom platen. This means that the wire in the center of the column of clay does not leave its direct line of travel. Consequently, this block has in effect, four lugs instead of two ribs extending entirely across the side of the block. This makes it possible for the cement grout filler to flow horizontally between the blocks and between the top and bottom lugs, thus insuring a more perfect bond if such is possible, than would be obtained by the original wire-cut-lug block where the rib extended entirely across the block and might possibly prevent the horizontal flow of filler.

Another advantage in the wire-cut-lug block with four-lug effect, is that it has not such a disadvantage in the standard rattler when subjected to the rattler test in comparison with the old style repressed blocks. In the original wire-cut-lug block with the ribs extending entirely across the block and corresponding grooves on the opposite side, it was found that in some cases this groove was quite close to the end of the block and the standard rattler sometimes might break off this end which greatly affected the test although it would of course not affect the wear of the block in the pavement.

Legal Height of Fireproof Buildings

Every now and again some exponent of the "City Beautiful" or some more utilitarian citizen with an eye to lower insurance rates, raises the question of limiting the height of skyscrapers in this or that, or some other city. It is interesting, therefore, to know what limits have already been placed in various cities and these, according to a list published in the "Building Age," are as follows:

Baltimore—Fireproof buildings limited to 175 ft. and non-fireproof buildings to 85 ft.

Boston—Two and one-half times the width of the street, the maximum being 125 ft.

Buffalo—No height greater than four times the average of least horizontal dimension of the building.

Chicago—An absolute limit of 200 ft.

Cleveland—Two and one-half times the width of street with maximum of 200 ft. Recesses or set-backs to be counted as added to the width of the street.

Denver, Colo.—Not to exceed 12 stories and those more than 125 ft. to be fireproof.

Jersey City, N. J.—No building or structure except a church spire shall exceed in height 2½ times the width of the widest street upon which it stands.

Newark, N. J.—Not to exceed 200 ft., but warehouses and stores shall not exceed 150 ft.

New Orleans, La.—The height at the street line shall not exceed 2½ times the width of the widest street which the building faces. Set-backs are to be counted as added to the width of the street.

Paterson, N. J.—Warehouses and stores must not exceed 100 ft. in height.

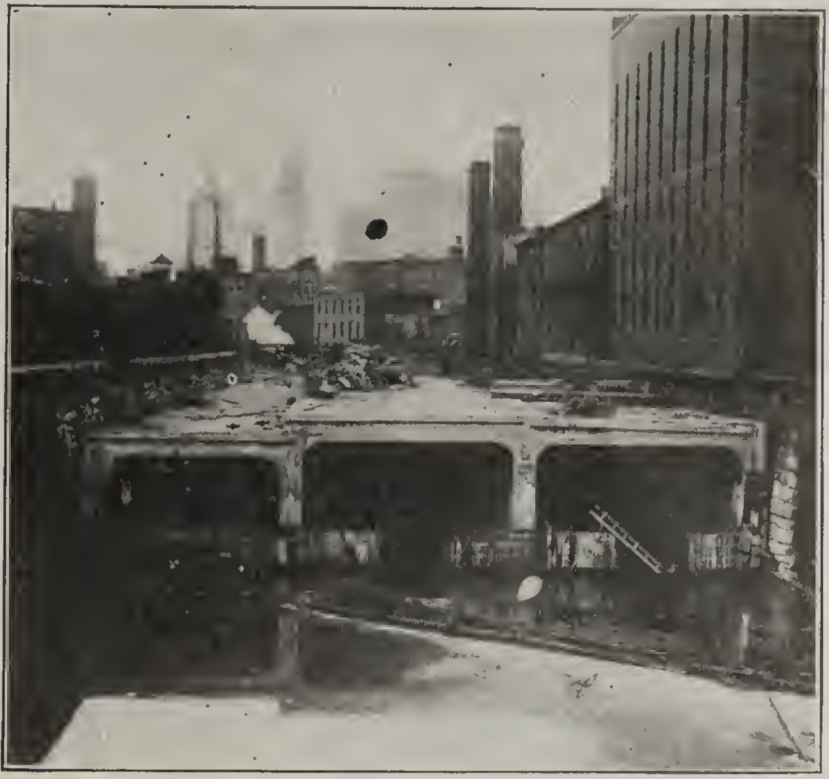
St. Louis, Mo.—On streets less than 60 ft. the limit is 2½ times the width.

NEW BOOK ON FIREPLACES.

Readers of "Brick & Clay Record" will recall the article published in a recent issue—"How to Obtain the Architect's Indorsement"—and the comments that were made regarding the necessity of good printing in trade literature. As if in answer to this article, the Thomas Moulding Brick Company, of Chicago, Ill., comes out with one of the most attractive booklets that have so far appeared in "brickology." It is called "Brick Fireplaces" and contains reproductions of fourteen very attractive wash drawings of mantels, done by B. J. Beck of Chicago, an artist of reputation. These drawings are in the "Arts and Crafts" style and show well designed interiors in dull sepia, the brickwork in the mantels being brought out in contrasting color. The architectural details are by William J. Wuehrmann, the winner of the Chicago Face Brick Association's contest for small brick house plans, and the design of the book and the text which accompanies the pictures is by Frederic W. Donahoe, author of a book previously issued by the Thomas Moulding Brick Company, "Artistic Brick and the Textile Principle in Brickwork."

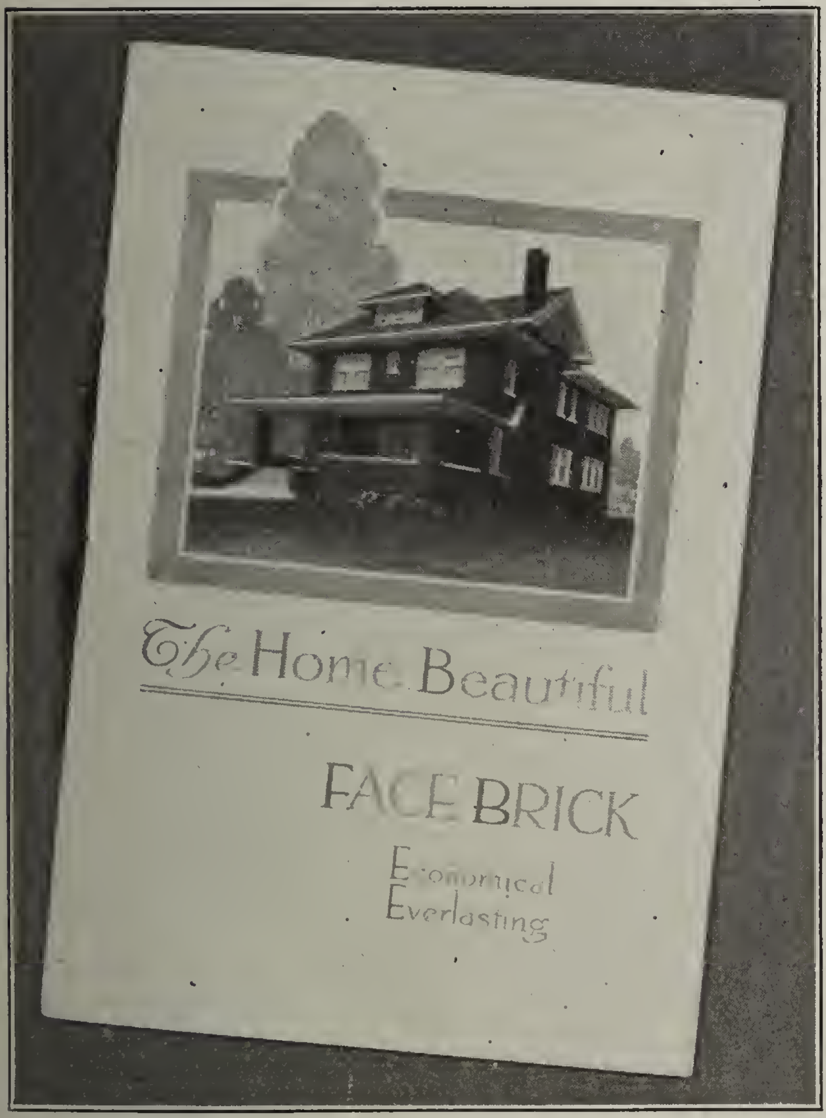
Converts Open Sewer Into Brick Paved Parkway

When Calvin W. Hendrick laid his plans for the conversion of Jones Falls, an open, nauseous sewer that flowed directly through the heart of Baltimore, Md., so that it might become a magnificent boulevard, he believed that reinforced concrete would answer all his purposes. He found, however, that the flooring of the three conduits through which the water was to flow, would have to be as smooth as smooth could be and knowing that concrete, subjected to the friction of constantly flowing water, would wear away in places, advised the use of highly vitrified paving brick for the purpose. Brick also is being used extensively in the paving of the street which roofs the conduits, so the parkway upon which will come the wear of steel shod horses and the passing of countless thousands of human feet, will have the same paving as that which is used to resist the action of the swiftly flowing water.



A Brick Paved Street Covering a Brick Floored Sewer.

What Are You Doing to Boost Face Brick?



This Booklet, with Cover in Colors, will be furnished brickmakers at $6.00 per hundred, your imprint on the cover free of charge on orders of 1,000 or more.

Feeling the need of a brick literature that would be in harmony with the thought and feeling of the Middle West, the Chicago Face Brick Association has prepared an exceedingly attractive booklet, the cover of which is shown on the opposite page. Printed in well chosen, delicate colors on extra heavy coated enameled paper, it presents the story of brick in a thoroughly artistic way, and has that appearance of "expensiveness" that is desirable in advertising literature for no one will throw it away unread.

To those who may be unfamiliar with the uses, aims and works of the Chicago Face Brick Association, it may be said that it comprises the leading face brick dealers in Chicago, who, in turn, represent nearly 200 manufacturers of face brick in this country. The fact that this booklet does not mention either the name of any one of the dealers who hold membership in the association nor of any of the plants they represent, shows that it is possible for face brick men to come together and work in harmony to a desired end, looking only to their fair share of the general good resulting, as a return for the time, money and interest invested.

In this book, the "story of brick" is told forcibly and well, the arguments are sound and cannot fail to impress the prospective builder with the economy, safety, beauty and general desirability of the brick house, as compared to all other houses, howsoever built. It is a book that you, Mr. Brickman, need in your business. You need it to hand to every one of your acquaintances who still thinks wooden thoughts. You need it to send to every friend who may be stuck with stucco. It goes on telling the story you started, or tells it before you get a chance to start—that is when you send it away by mail.

Having proved its value as an advertising medium for the dealers in Chicago, it has an advantage many booklets do not possess—that of having been "tried out." With this in mind, "Brick and Clay Record" has made arrangements to print an extra edition and arrange for a wide distribution. To this end, a price of $6 per hundred has been set—an extremely low figure, considering the high quality of the book. The imprint of the distributor's name will be placed on the cover, free of charge where orders are for 1,000 copies or more. Sample copies will be sent on request.

The American Brick & Tile Company of Morenci, Mich., has changed ownership, Mortimer Miller, B. F. Simmons, and G. C. Miller, all formerly of the Indiana Drain Tile Company, of Brooklyn, Ind., having purchased the plant. It is being run to capacity and plans are being made for its extension.

Selling Brick

SALESMANSHIP AND ITS APPLICATION BY THE MANUFACTURER OF BURNED CLAY PRODUCTS

This is a series of heart-to-heart talks on one of the most important and most neglected departments in the successful conduct of a clay product plant. Mr. Wells also will review current advertising by clay plants, as publicity is one of the essentials of good salesmanship. Manufacturers are invited to submit copies of their advertising for critical review.

Keenness of Perception

Heart Talk No. 7

By Iverson C. Wells

SUCCESSFUL salesmen have the power of perception highly developed. Their range of vision is wide. They see everything. Nothing escapes them. The little things are noted as well as the big ones. A newspaper item, apparently trivial in nature, may contain hidden possibilities. A glance out a car window may suggest something that can be used to advantage.

Quite often we miss large contracts because we fail to see far enough ahead.

For instance, there was a certain brick salesman who, with a salesman for a rival manufacturer in a middle-class city, was engaged in general conversation with two or three architects.

The name of a well known building promoter was mentioned incidentally by one of the architects. Another in the party casually remarked that evidently the promoter was hard-pressed for money as he had been seen dining with a prominent banker twice in as many days.

Three or four days later our friend, the brick salesman, incidentally mentioned the conversation to his employer, emphasizing the comment made by one of the architects who "guessed" the promoter was hard-pressed for money because he had been seen dining with a banker two or three times.

"Did you make an investigation?" asked the employer.

The salesman was forced to admit he had not.

"I didn't think we were interested," he said. "We haven't sold him a brick for six months. If he is in a hole it won't hurt us."

The employed seized the salesman by the shoulder and facing him to the door, said:

"You get busy! See what is behind that conference between the promoter and the banker."

Without any further advice he pushed the salesman into the hall and closed the door.

After a few hours' investigation the salesman uncovered the fact that what the promoter really was seeking from the banker was a loan negotiation to erect a huge office building. He also discovered that his rival salesman, possessing a keener perception, had sought the promoter immediately after the conference with the architects and discovered the same facts and that he had the inside track on the proposed job and stood an excellent chance landing it.

It pays to keep an eye open.

ONCE a young salesman for a brick and drain tile manufacturer in a small town was seeking to make a small sale of tile to a farmer in his territory. He had secured his order and while waiting for the midday meal which his customer had invited him to partake of, entered into a general discussion of the weather, crops, politics and the neighbors.

One of the larger and more successful farmers in the vicinity came in for a great share of the discussion. Evidently the salesman's customer envied him somewhat, for, in speaking of his neighbor's eccentricities, he remarked:

"He has more hobbies than a city farmer. Why, that fellow will buy any new-fangled contraption offered him."

The salesman got to thinking. Before the day was over he had seen the neighbor, had sold him two hollow tile silos, and interested him in the proposition to make his residence, barn and farm houses out of burned clay.

That salesman, of course, is able to see a little further than his nose.

A GOOD SALESMAN is able to make four out of two and two without stopping to find a pencil and a sheet of paper. If he sees a man and his wife taking a stroll some sunny Sunday afternoon and viewing studiously the recently constructed and more attractive homes, he must also be able to see that they are figuring on building a home for themselves and loses no time in getting in touch with them.

If the local weekly newspaper has a three-line item from its Four Corners' correspondent which tells of a fire that destroyed some frame business buildings, it is reasonable to suppose that the owners of the property will want to rebuild and that they will be easy converts to imperishable, fireproof burned clay.

Keenness of perception can be cultivated just as easily as strong muscles may be developed on weakly limbs, and the method is the same—exercise.

Constant practice will give you quickness of the eye and alertness of the brain. Slow thinkers may train themselves to think and act quickly. It is merely a matter of development.

We all have the same gifts, but some of us permit certain faculties to wither through disuse.

Sandow, strong as he is, could become a mere pigmy in strength if he tied his arms to his sides and sat in an invalid's chair for a time.

Even a harvesting machine may become useless if allowed to remain unprotected in the rains and the storms, unoiled and unused.

THE SUCCESSFUL MEN of today or any other day are those who think fast and act fast. I came in contact the past week with a man who owns a string of general stores and three banks in a certain part of Michigan. He decided to build a small boat house to keep his launch in during the winter at his summer home on one of the numerous little lakes in Michigan.

The banker left his son to draw the plans. One day he went out to see how the work was progressing. The building was partly erected. As he stood surveying the work a summer resorter came up.

"Can you tell me where I can find a cottage to rent?" he asked. "I have hunted all day without success."

The resorter had not disappeared from sight before the banker had halted the work and with but a few dollars extra cost had altered the boat house plans to such an extent that it could easily be used during the summer as a small cottage and just as easily converted, through removable partitions, into a boat house in the winter.

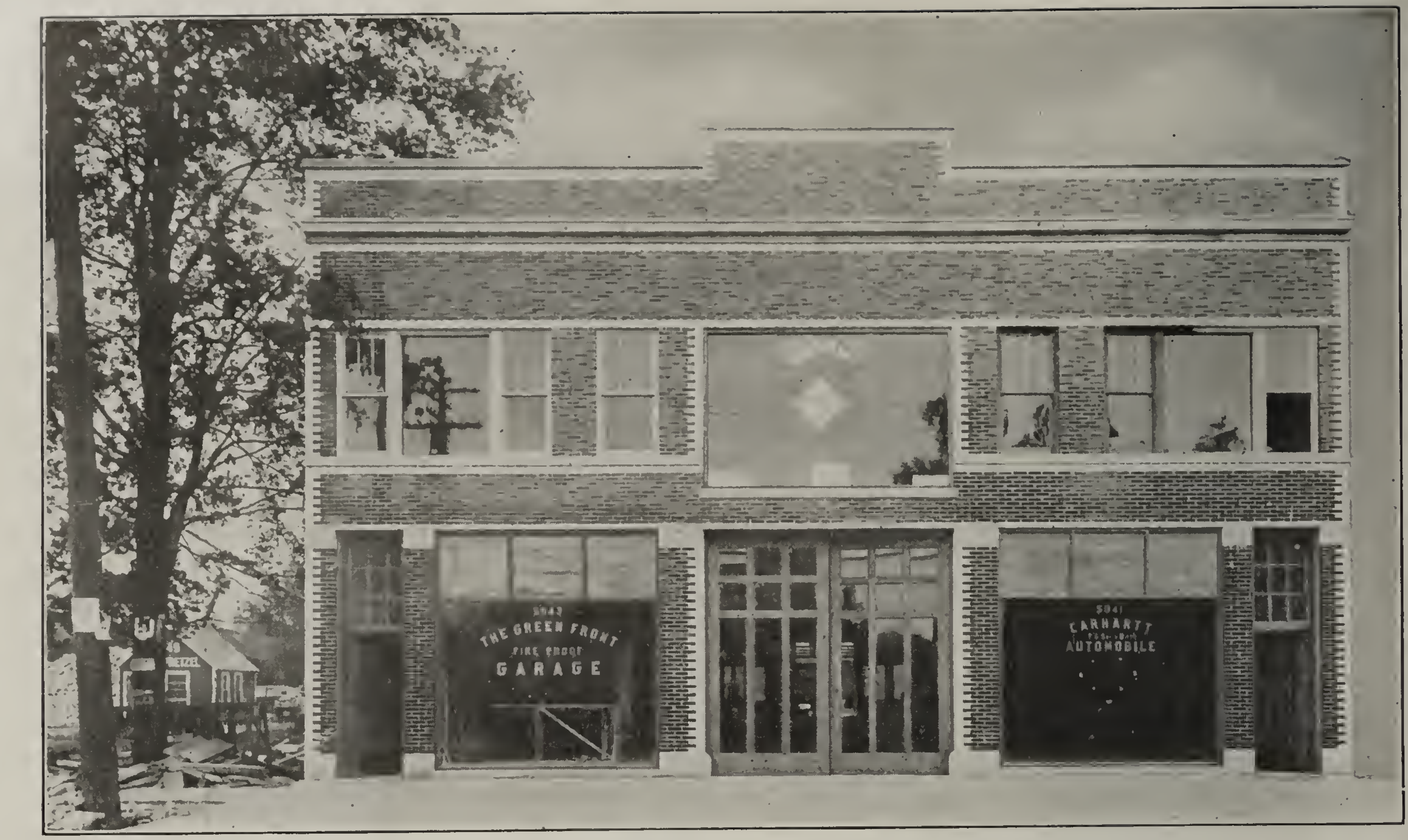
That was two years ago. He gets $15 a week rent for the cottage during the summer season and still has his boat house for the winter.

It is through keenness of perception that men make the best of life—the ability to see quickly the possibilities of the future, and he who has it the more developed is he who is most successful, whether he is a brick salesman or a banker.

IN MANY plants, where the owner himself is manager and salesman as well, keenness of perception would aid him in finding a wider market for his product than that which he now enjoys. We have all grown so accustomed to "good building years" that we are apt to forget that the slightest ripple on the sea of finance will tie up many of the projects that now seem sure and that any complication with a foreign Power would make that ripple a certainty. In a "bad year" the manufacturer with a limited market stands with his back to the wall, his sales costing him more, his product bringing him less. On the other hand, the man who has built up a small trade in many places, some far away from his own home town, can draw upon these out-of-the-way markets for "repeat orders," if his deliveries have been prompt and his treatment fair.

Keenness of perception, too, lead him to give these far-away markets extraordinarily good treatment and not dismiss them with the thought, "Oh, those fellows will never buy so far from home again." Something in the color of your brick, something in the glaze of your tile, something in the personality of the buyer—a friend, perhaps, of a friend of yours—may have led to the first sale and to the continuance of orders, if the service you give the unknown buyer is a little better than which you call "commercially perfect."

Keenness of perception will lead you to ascertain markets to which you have never made a shipment, and having found them, to ask yourself why that condition exists. Some one is supplying the same sort of ware as you are making—do you know what price he is receiving and his freight rate?



Garage on Evanston Avenue, Chicago, Ill. Green "Hy-Tex" Enamels, Trimmed with White "Hy-Tex" Enamels, Furnished Through the Chicago Office of the Hydraulic-Press Brick Company.

Enamel Brick

ARISTOCRAT OF FACING BRICK GAINING POPULARITY AT HOME AND ACROSS THE SEA

By George E. Walsh

IN cities where the atmosphere is soot-laden, the artistic and utilitarian value of enamel brick for facing buildings and light courts has been amply demonstrated. The sanitary value, however, is but beginning to receive recognition. In London, Eng., the municipal authorities have passed an ordinance compelling their use in alleys and courts of a certain restricted width, claiming the glazed surfaces do not absorb or retain the impurities of the atmosphere.

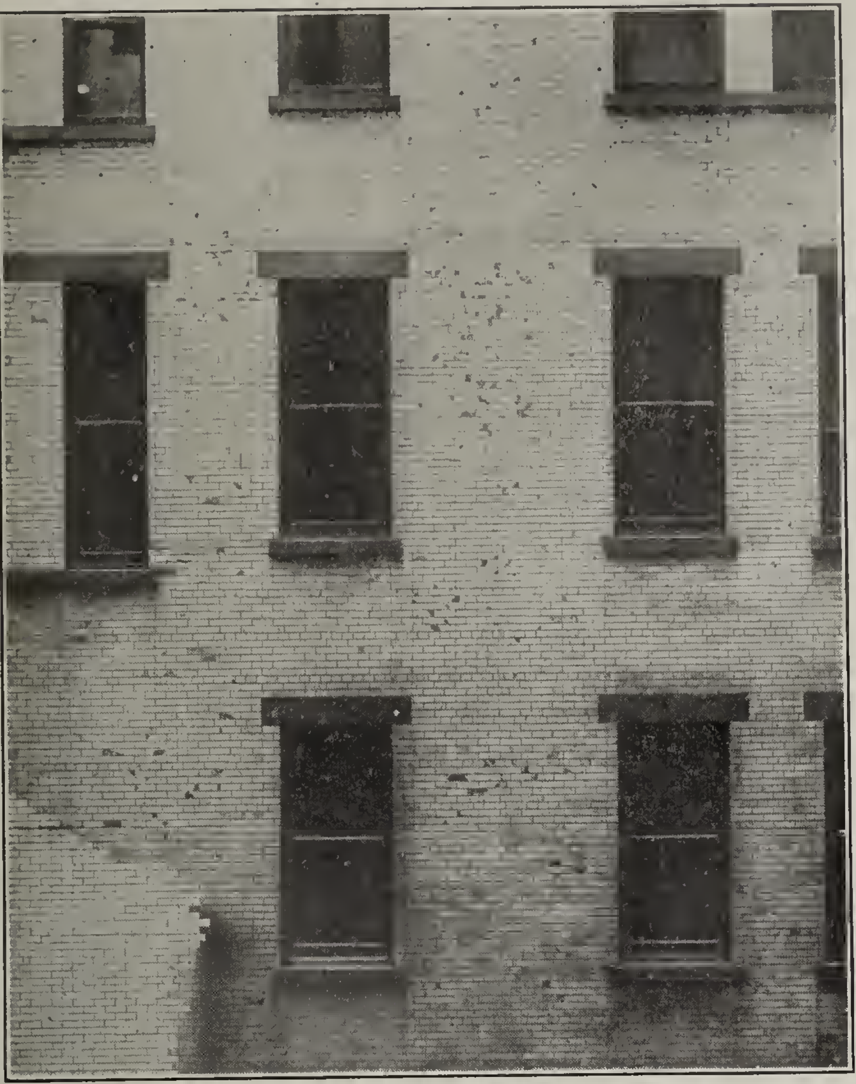
In hospitals, public lavatories, subway stations and slaughter houses their use has become custom, and their actual sanitary value has been capitalized, in a way, by builders of "tax-payers"—one-story structures in neighborhoods where land values are high and store rentals in good proportion—but where the owners want to hold the property practically unimproved, for some years. In cases of this kind, the fronts are faced with enamel brick and leased at enhanced rentals for meat-markets, "delicatessen," high-grade groceries and florists' shops. Here the actual sanitary value is small, but the impression of absolute cleanliness within is given by the glistening whiteness without.

The enamel brick industry is by no means an old one in America. It was but a few years ago that all of our enamel brick came from England and it is due the American manufacturer to say here that he, for one, has not taken advantage of the protective tariff afforded his industry, but under its fostering influence, has grown from a lusty infant into a full grown, giant industry. And in his growing he has improved his product, so that American made enamel brick is equal to, if not superior to any produced abroad, and sell for about two-thirds of the price previously paid for imported brick.

Perhaps the best proof of this is given in the illustration that accompanies this article, showing where, in the court of the Metropolitan Life Insurance Company's building in New York, English made enamels having crazed and flaked off, are being cut out and replaced with enamel brick manufactured at Mount Savage, Md.

In the early history of the industry were many failures. The attempt to burn the enamel on a red clay body proved disastrous, and it was not until the manufacturers had abandoned the soft glazes and, by burning the hard enamels on light buff, fire-clay bodies, that our brick were a commercial success. Once started on the road to popular favor, the manufacturers vied with each other in producing varied color effects, so that today the variety of shades produced by American factories is infinitely greater than that made abroad, and in their subtle gradations and colored under-glazes they are, indeed, "world beaters."

There is, however, always "a fly in the ointment" and in this case the offending *musca domestica* is the unskilled labor—that is, unskilled in the laying of enamel brick—that is frequently employed in bricklaying. For this reason, the practice of guaranteeing enamel brick not to craze or crack in the wall has proven a hardship on the manufacturer, since he has no control over the method of laying and knows that improper workmanship will result in unsightly spalls and patches, for which, although he may shoulder the blame, the man who made the brick is in no way responsible. Various attempts have been made to secure the adoption of a standard set of setting specifications, and to limit guarantees to work that has been set under these specifications and under proper inspection, but so far this has been impossible.



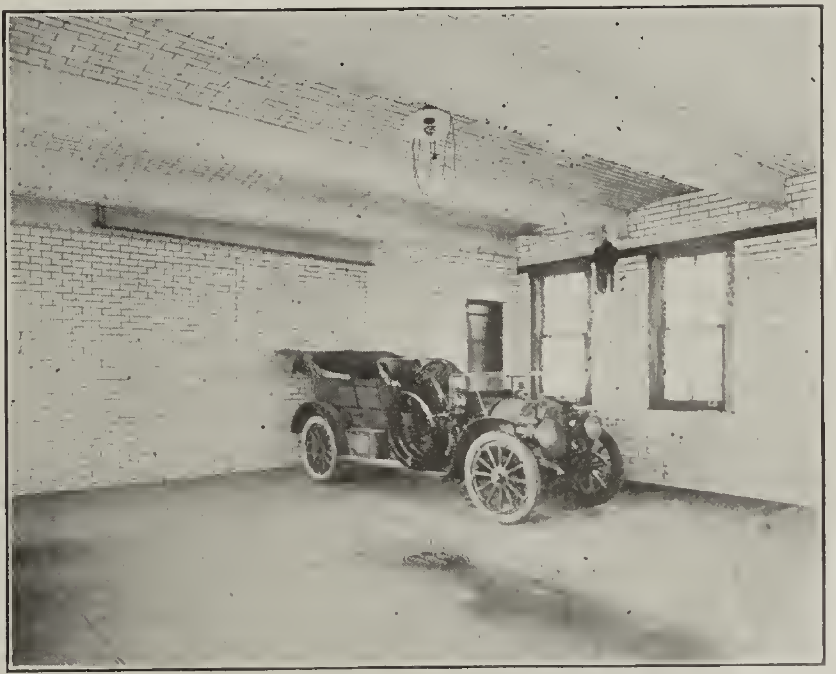
Court of the Metropolitan Life Insurance Company's Building in New York City. Enamel Brick Imported from England Being Replaced by American Made Enamels, Furnished by Andrew Ramsey, of Mount Savage, Md.

As in facing brick, various standard sizes have been adopted in enamel, but the number of sizes is greater and the number of different moulded brick much larger. Where pressed brick is made in standard (8 in. x 2¼ in. x 4 in.), Roman (12 in. x 1½ in. x 4 in.) and Norman (12 in. x 2¼ in. x 4 in.), enamels are made in "American" size, which corresponds to the "standard," in pressed brick, "English" (9 in. x 3 in. x 4½ in.), "Roman," which is the same as the pressed brick Roman and Norman, which is the same as the pressed brick Norman. But in enamel brick, they make "flats" which are either Roman or Norman size, enameled on the bed, so giving an enamel surface 4 in. by 12 in.

In fancy shape brick, the number that must be made to carry the enamel brick into the market is out of all proportion to real necessities, and enamel catalogues to today look very much as did the booklets issued by pressed brick makers twenty years ago. It is to be hoped that this expensive and unnecessary feature of manufacture will be gradually relegated to the snows of yesterday, to join the fancy moulded shapes in pressed brick.

As in facing brick, there exists a wide difference of opinion as to the relative merits of dry-press and stiff-mud in the manufacture of enamels. For the former, it is claimed that the dry-press body, being more perfect in shape, gives a surface that will take the enamel perfectly and, at the same time, let it flow on a plane that is so accurate, that the finished product will be as smooth as a pane of plate glass. The absorption of the dry-pressed "biscuit" has been overcome by the use of an underglaze of an impervious and opaque material, that protects the transparent glaze from any discoloration that might enter the body of the brick either from the backing up wall or through the joints. On the other hand, the plants that use the stiff-mud process claim that, by burning the biscuit and the enamel at one time, a more perfect bond is formed between the two and a more lasting product insured.

Baggage Room in Chicago & Northwestern Railway Company's Chicago Depot. Norman Flat Enamels Furnished by the Tiffany Enamel Brick Company.



Interior of Garage in New Jersey. Ceiling and Walls Faced with English Size, White Enamel Brick, Manufactured by the American Enamel Brick & Tile Company.

How Cox Got Into the Game

BEING THE STORY OF A YOUNG MAN WHO FELL HEIR TO A RUN-DOWN CLAY PLANT

By Iverson C. Wells

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SYNOPSIS OF PRECEDING INSTALLMENTS.

A dilapidated clay plant in Ohio is left Albert Cox, a young insurance solicitor, by his grandfather. Cox visits Mauryville with the idea of selling the plant to some one. Selling is his profession and he argues that any one who learns the principles of salesmanship should be capable of selling anything. He finds, however, that the clay plant has not been run for years and that the clay supply is exhausted. The machinery is antiquated and Sawyer, the old foreman, tells him it is only good for junk. Cox considers cutting up the land into city lots, but the gaping holes in the clay pit soon convince him that his task is hopeless, and he is about to give up in despair when he meets Charlie Simpson, a student at the state school of ceramics, who is home for the summer vacation. Simpson, in exploring the neighboring hills, finds an excellent deposit of clay on one end of the Cox estate. Cox becomes interested in the young man's enthusiastic report and, despite Sawyer's despairing advice, plans to turn the discovery to practical use. He obtains an option on the adjoining property and offers to sell his holdings to Brown Bros., a prosperous firm of clayworkers in a nearby city, which is seeking a new location. The eagerness with which the Brown Bros. take up his offer suggests to Cox that young Simpson was right when he said the clay was of an unusual quality, and getting a sample brick made he slips into Cleveland to consult an architect. It is his intention to verify young Simpson's claims with the idea of establishing a value on the property. To his surprise the architect is very enthusiastic over the brick and offers to take 200,000 on a 60-day delivery. On the impulse Cox agrees to furnish the brick. A visit to other architects gives him tentative orders amounting to 1,000,000 brick. This decides Cox and he determines to go into the brick business. He starts out to rehabilitate the old plant with the assistance of Sawyer and young Simpson. After a visit to the Steinway Brick Machinery Co.'s plant at Pressville, Cox selects his equipment and for two weeks work is pushed night and day in the new plant. The severe strain soon tells on the men and Sawyer and young Simpson finally clash. Cox interests a Chicago dealer in his product and closes a big contract with him whereby he finds it necessary to plan for an enlargement of his plant. He makes arrangements with a machinery house to supply him with additional equipment when he needs it. Late one night Cox discovers his plant on fire and seeing a fleeing figure shoots. It develops that he has shot Sawyer. The old superintendent is seriously wounded and is in danger of losing his voice, but finally recovers under Cox's careful nursing and it develops he was wounded in his attempt to capture a discharged employe who sought revenge with the torch. In the course of time the first burning is completed and Cox proceeds to load his cars for the Cleveland shipment. A strike ties up all the railroads and Cox is apt to lose his sale through failure to deliver on contract time. He hits on a happy idea. He orders 15 motor trucks and proposes to utilize them in rushing his brick to market.

"HAVE you got those trucks on the way," I asked without taking the time to introduce myself.

"Did you send this message?" He asked.

"Good lord, you don't mean you haven't!" I exclaimed.

"We don't run a night office sir. Besides this order is rather unusual—".

"It's plain, just the same," I said, with considerable exasperation and interrupting him. "I want those trucks and I want them badly."

"What's the occasion—why all this excitement?" asked the fellow, evidently doubtful of my sanity.

I told him the situation in as few words as possible.

"We haven't got that many trucks, Mr. Cox."

"You can get them—they are in Cleveland. I leave that to you. It's your business."

"It is an unusual proposition Mr. Cox. I do not recall ever hearing of a similar case—"

"That's neither here nor there," I answered rather impatiently. "I want those trucks and I want them right away. If you can't deliver the goods, say so. I'll go where they can."

"Hold on, Mr. Cox," he hastened to say as I started for the door. "Let's talk this over a little. You see I—"

"There's nothing to talk over," I replied, pausing at the door. "All I want to know is, can I get those trucks?"

"Yes, I can furnish you with fifty, if necessary and given a little time."

"Well, get busy and start fifteen off to Mauryville," I said, "I want them bringing brick here before the day is over."

It took us about ten minutes to discuss terms and for me to satisfy him that I could pay the bill which almost staggered me when the figures were given me. As I started to go the manager asked me what conditions the roads were in.

"That's a most important feature to the success of this venture," he said with a faint smile.

"I figured that all out at the start," I replied. "You see we are on the Humphrey road and that's vitrified brick all the way into Cleveland. You can't beat that.

"No, that's true, it is as slick as glass."

Receiving his assurance that the trucks would be on the way within half an hour, I left the motor truck office and hurried over to see Henderson, the architect-contractor to whom my first burning of brick were to be delivered.

"Hell, isn't it?" he said, as he turned in his chair to greet me. "Had an idea for several days this strike would turn out as it did and it didn't catch me unprepared if it did you." He smiled in a satisfied, self-indulgent way, as he thought of his own astuteness.

"What do you mean?" I asked, although I could have answered my own question. He evidently had little confidence in my ability to fulfill my contract, which called for delivery on a certain date and, as the delivery date was tomorrow, and the road tie-up seemed good for several days if not weeks, he had put me out of the running.

"I mean I did not intend to be caught napping," he replied with considerable assurance. "I feel sorry for you, young man, because this experience is going to be a costly one for you and perhaps will mean ruin to you. But it is the law of self-preservation and I must look after No. 1."

"What have you done?" I asked.

Henderson squared himself before me and using his pencil to punctuate his words, said:

"When I saw in the papers a few days ago how the Central West lines are being threatened, I made haste to scour the market for brick. I found a plant up in New York that had a brick that answered my purposes fairly well. It is true they are not a pretty golden yellow like your 'Goldfields,' but I showed a sample to the builder and he agreed to accept them at a certain discount which lets me out fairly well."

"But how can you get them here?" I asked.

"Oh, that's easy! By water."

"What about my contract, Mr. Henderson? You can't break it this way."

"I am not breaking it, Cox. It is you. Failure to deliver on time means an automatic ending of the agreement."

"Yes, but I haven't failed to deliver, yet," I quietly replied.

Henderson smiled and reaching for a morning paper, pointed to the story of the last 24 hours which I knew by heart.

"I know all about that," I said impatiently. "Still, I have 24 hours in which to make delivery, for our contract gives me until 12 o'clock noon tomorrow."

"You haven't the slightest chance to make good," he said, tapping the newspaper significantly.

"I don't know about that," I answered. "There are other means of transportation."

Henderson wheeled about and looked at me in surprise.

"What other?"

"Why by the Humphrey vitrified brick road. It is a direct air-line from Mauryville to Cleveland and only 60 miles."

"It would take you a month to get these 200,000 brick into Cleveland by wagons," he said, and almost laughed outright at the suggestion.

"How about motor trucks?" I asked.

"Motor trucks? You don't mean—?"

I nodded my head, and it was my turn to smile as I thought of the caravan of 15 cars that soon would be on their way. Henderson was thoughtful a moment. Presently he looked up.

"Cox, I admire your grit." He paused a moment but suddenly added: "Still you can't get 200,000 brick delivered by noon tomorrow!"

"I have fifteen trucks engaged. They will make one round trip a day and being of 5-ton capacity, I can have the 200,000 delivered complete in three days time."

"But that isn't tomorrow noon," Henderson exclaimed.

"No, that's true," I replied, a lump growing up into my throat as I thought of that delivery clause and of the evident intention of Henderson insisting on the fulfillment of the letter. "Still you couldn't use all the brick I can deliver to you in a day if you had every bricklayer in Cleveland at work."

Henderson was thoughtful a moment. Finally he turned to me and held out his hand.

"Cox, I like you and I don't intend to take any advantage of you. If you get a reasonable delivery on the ground by tomorrow noon—enough, understand, to keep the masons busy, and continue that daily, you have filled your contract to the letter. You see the streets and alleys committee of the city council will not permit us to occupy only a certain space with material. For that reason all contractors have interpreted the delivery clause to mean just enough to keep the bricklayers busy."

"If that's the case," I said, "I'll be able to keep you going. Why man, I'll have to cut down on my motor trucks or find a storage yard somewhere in Cleveland to handle the surplus."

"I am glad we've found a way," Henderson said. "To tell you the truth, my customer likes your 'Goldfields' and assessed me a heavy penalty when I told him I would have to change brick."

Henderson added he would countermand his order for the New York brick and proceeded to write a telegram to that effect. He sent a call for an A. D. T. messenger and as I waited I 'phoned the Cleveland Motor Livery Service to see how they were getting along with the caravan.

"Those brick started?" I asked.

"No, sir, and what's more, we can't fill your order before tomorrow afternoon. Every truck we have, except two, is under contract and our people won't release us."

"What about renting some outside trucks?" I yelled. "I've got to have those trucks at any cost."

"I've been trying to get them—did everything possible. Have scoured the city. Can't possibly do a thing until tomorrow, if then."

Explaining to Henderson the situation, I hurried over to the motor service company and it did not take me long to ascertain that I was in a predicament. A peculiar situation existed. There was several auto liveries in the city, but with the exception of one or two firms, nearly every one had their trucks out on contract. Those not engaged were in service. The best I could do was to wait and that meant ruin.

After a vain search over the city I returned to Henderson crestfallen. When I told him the situation, he simply said:

"I am sorry, Cox," and reaching for the A. D. T. button began writing a second message to the New York brickmaker reinstating his order.

I sat in silence while he was writing, but I was thinking.

"Well, Cox, it is the one of the many set backs a fellow in business has to contend with. You've got too much grit to let this crush you."

"I haven't given up," I replied quietly. "I'll have a delivery on the ground by noon tomorrow. In fact I can have them there within an hour if you say the word."

"Within an hour" Henderson exclaimed. "Why man you're crazy."

"No, I am as sane as I ever was. I mean what I say, too."

"Impossible!"

"You forget, Mr. Henderson, I shipped in a carload of brick over the Buckeye Central last night. It was the last train that ran before the tie-up. They arrived during the night and are now in the yards waiting unloading."

At that moment the A. D T. messenger entered.

"Never mind," Henderson said to him as he tore up the second telegram. "It was a mistake."

The boy closed the door behind him and once more Henderson reached for my hand.

(The Continuation of this Story will be in the Sept. 1 issue.)

Green Brick Made in California

A green brick—one that will stay green, not "go green"—has been made by George W. Bostwick, manager of the Sacramento, (Cal.) Sandstone Brick Co. While practically every other color has been possible in brickmaking, green has, up to this time, defied the science of the chemist and the ingenuity of the inventor. Green brick have been made, but they were as expensive as the proverbial "gold brick" and, again, they sometimes refused to stay green. Many brick, both clay and composition, have "gone green in the wall" but that green is one that is to be deplored and avoided—and, where possible, "explained" away.

Like every other brickmaking chemist, Mr. Bostwick had tried, time and again, to make a really green brick—one that was meant to be green—and it was not until some practical jokers, taking advantage of an inexperienced salesman—it is rubbing it in to call him a "green" salesman—ordered a large consignment of green brick, that Mr. Bostwick felt that he ought to make another stab at the problem.

It was somewhere along the 15th of last March, probably within two days of that date, that the emerald hued salesman asked for a sample to clinch the order. The chance of putting over a seasonable joke was too strong for Br. Bostwick's sensibilities and he set to work at the plant of the company, at North Sacramento. A few days later he brought a brick into the town office of the company that looked like a small section of a well kept and well-watered lawn. There was no mistaking it—the brick was green.

Acid was poured on it, but it stood the test. The brick was subjected to eighteen hours' bleaching process in the steam cylinder and came out without a blemish. The eighteen hours in the steam cylinder is equivalent to hundreds of years in the open, so it appears that at last a green brick has been made and interior contractors will have one more color to work into their designs.

New Methods and Processes

A DEPARTMENT OF TECHNOLOGY
WHEREIN RECENT EXPERIMENTS
AND DISCOVERIES ARE EXPLOITED

Edited by

Charles S. Kinnison

Ceramic Chemist, United States Bureau of Standards, Department of Ceramics

Contributing Editors: Prof. Charles F. Binns, Ellis Lovejoy, C. E., Anton Vogt, C. E.

Coloring Power of Iron Compounds in Burned Clay

It is well known that iron is the most prolific colorant in burned clay wares, a great variety of hues being produced by it, the color going through all the variations from white through yellow, orange, red, blue, brown up to black.

The original source of the iron, as well as the presence of other ingredients in the clay, are of great influence on the color produced. Prof. Chas. F. Binns and Mr. C. F. Makely carried on an investigation with the view of throwing some light on the subject and in an attempt to ascertain the effect of the most common sources of iron under the influence of Al_2O_3 and SiO_2 respectively.

From their results it seems evident that:

(1) It is not possible to produce red colors in burned clay by the use of pulverized iron bearing minerals, however finely pulverized they may be ground, but buff tones are produced at a temperature at which the clay approaches vitrification.

(2) Red colors are the result of a precipitation of a colloidal iron compound in the clay mass.

(3) Pyrites are responsible for several phenomena. From it ferrous sulphate is formed and ultimately, ferric hydroxide which produces the red color.

(4) Al_2O_3 is undoubtedly responsible for the production of buff colors.

Peculiar Behavior of Various Wall Tile

After having been on from 4 to 6 weeks, wall tile, without any apparent reason, occasionally fall without any warning from the wall on which they are laid. The contractors claim the fault is due to some inherent property of the tile, some assigning low porosity as the cause, and others, the smooth surface of the tile.

Prof. Dr. H. Seger and E. Cramer of the Chemical Laboratory of the Clay Industry, Berlin, Germany, carried on some experiments to throw some light on the question. The wall tiles used showed an absorption of 8.5 to 11.2 per cent, and it was found that the tile of low porosity behaved similarly to those of high porosity, as regards their adherence to the wall. Low porosity is, therefore, not the cause of the trouble. A study of the mortars used in the faulty cases showed them to be exceptionally strong and satisfactory, thereby eliminating them as the cause of the failure. An inspection of the wall tile which had fallen off showed, however, that no mortar adhered to them and that there was evidently but slight bond between the two.

The fact that identical lots of tile were satisfactory in some cases and not in others, led to the belief that perhaps the trouble was due to the method used in applying the tile. In cases where, as a rule, the tile had fallen off, it was found that they had been completely saturated with water before being used, the reason being given that no water could then be absorbed from the mortar. This reason would seem logical enough if only the necessary amount of water had been used which was required for setting. The mortar had been made and used, however, containing much more than this amount of water. The argument given for saturating the tile with water, then, is not founded on reason.

In those cases where the tile had proved satisfactory, it was learned that they had been merely moistened befor being laid. From this is seems that the failure of the tile to adhere properly was due to the fact that they were saturated with water before being used.

To decide this point, tile were obtained from various concerns, and applied to a brick wall, using different mortars, the tile being so laid that they extend somewhat beyond the edges of the wall. Two sets of each tile were used, one being moistened with water and the other saturated.

The mortars used were of the following mixtures:

1. 1 part cement.............................. 3 parts sand.
2. 1 part cement.............................. 5 parts sand.
3. 1 part cement.............................10 parts sand.

After 25 days the tile were torn from the wall by means of a special device, measuring the amount of force necessary. The following results were obtained:

	USING MORTAR NO. 1.	
Tile	Saturated	Moistened
a	52.2 lbs.	220.5 lbs.
b	16.1 lbs.	236.3 lbs.
c	4.3 lbs.	299.3 lbs.
	USING MORTAR NO. 2.	
a	8.9 lbs.	83.3 lbs.
b	1.8 lbs.	82.1 lbs.
c	Did not adhere	93.7 lbs.
	USING MORTAR NO. 3.	
a	Did not adhere	44.5 lbs.
b	Did not adhere	12.0 lbs.
c	Did not adhere	31.0 lbs.

To the saturated tile, as a rule, no mortar adhered, the tile falling away clean, while in the case of tile merely moistened, it was found that the mortar was torn asunder, part adhering strongly to the tile.

The results show conclusively that the failure of some wall tile to adhere properly is due to the fact that they are water soaked when applied and not to their low porosity or to their smooth surface.

Percentage Composition in Chemical Formula of Fire Clay

Inasmuch as clay fire brick must possess certain definite requirements, which are sharply defined by the properties of the raw material from which it is made, the man engaged in their manufacture should not only know something of the analysis of his clay but he should also know the effect of the materials shown in the analysis.

The principal constituents found in fire clay are silica and alumina. The two together form a hydrous silicate of alumina which is the typical pure clay. As a general proposition, it might be said that it is the pure clay substance which imparts to clay its refractoriness. Practically all the other constituents detract from this property and might be classified as impurities.

It is often desired to compare the composition of different clays with each other, for the purpose of study. Where the composition is given by a chemical analysis in terms of per cent, the figures themselves are very confusing and often misleading, making a strict comparison extremely difficult. Most of the clay workers do not recognize this and insist on having the composition of their clay shown by a chemical analysis.

Chemical formulas on the other hand, systematize composition, so that it is possible at a glance to make numerical comparison of the like constituents. The fluxes are classified together and represent by a constant, their sum; the alumina is made equal to one, leaving the silica as practically the only variable.

Now, of course, the weight of the molecule of the different substances is not the same. For instance, the weight of a molecule of silica is 60, and on the same scale, the weight of a molecule of alumina is 102.

In other words, when we have present 60 parts of silica, it is proportional to one molecule of SiO_2 (the chemical formula of silica) and similarly 102 parts of alumina are proportional to one molecule of Al_2O_3 (the chemical formula of alumina). Then evidently if we had present 120 parts of silica, it would be proportional to two molecules of SiO_2 (120÷60).

This is the way the chemical formula is calculated from the analysis. Merely divide the amount present by the molecular weight of that constituent to find out how many molecules are represented. The method of calculation is expressed in the following rules:

Rule I. Divide the percentage of each ingredient by its molecular weight, taken from the table below.

The object of this rule is to obtain in each case an expression which signifies how many times the molecular weight of a substance is represented in the analysis given.

Rule II. Reduce the expression obtained under Rule I to its lowest terms, by dividing through by the alumina.

It is evident that this operation is merely making the alumina equal to one. This is done for no other reason than to have some standard method of expression.

In expressing the composition of a glaze by a chemical formula, the sum of the fluxes is made equal to one, in the same way that the alumina is made equal to one in the chemical formula of a clay and for the same reason.

Molecular Weights.

Substance	Formula	Mol. wt.
Silica	SiO_2	60
Alumina	Al_2O_3	102
Ferric Oxide	Fe_2O_3	160
Titanium Oxide (Rutile)	TiO_2	64
Calcium Oxide (Quick Lime)	CaO	56
Magnesium Oxide	MgO	40
Sodium Oxide	Na_2O	62
Potassium Oxide	K_2O	94

To illustrate the calculations we will consider the following analysis of a flint fire clay, which contains all the materials usually found in fire clay. The accompanying table contains the molecular weights of these constituents.

Analysis of Flint Fire Clay.

SiO_2—81.60%
Al_2O_3—14.55
Fe_2O_3— 1.15
TiO_2 —0.49
CaO —0.37
MgO—0.27
Na_2O—0.67
K_2O —1.08

Applying Rule I to our analysis:

SiO_2 —81.60÷ 60=1.360 molecules
Al_2O_3—14.55÷102= .142 "
Fe_2O_3— 1.15÷160= .007 "
TiO_2 — 0.49÷ 64= .008 "
CaO — 0.37÷ 56= .007 "
MgO — 0.27÷ 40= .007 "
Na_2O — 0.67÷ 62= .011 "
K_2O — 1.08÷ 94= .012 "

Reducing the foregoing expression to their simplest form by Rule II, we have:

SiO_2 —1.360÷.142=9.577 SiO_2
Al_2O_3— .142÷.142=1.000 Al_2O_3
Fe_2O_3— .007÷.142= .051 Fe_2O_3
TiO_2 — .008÷.142= .053 TiO_2
CaO — .007÷.142= .047 CaO
MgO — .007÷.142= .047 MgO
Na_2O— .011÷.142= .077 Na_2O
Ka_2O— .012÷.142= .081 Ka_2O

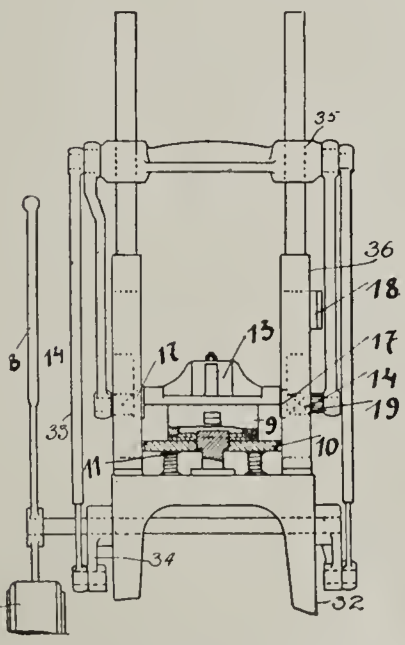
The formula of this clay therefore is:

$$\begin{array}{lll} .081K_2O & & \\ .077Na_2O & 1.000\ Al_2O_3 & 9.577\ SiO_2 \\ .047MgO & .051\ Fe_2O_3 & .053\ TiO_2 \\ .047CaO & & \\ \hline .252RO & & \end{array}$$

The fluxes are classified together and are designated by the expression RO, merely for convenience. This gives us at a glance a numerical constant expressing the total content of fluxes.

This explanation has been given as an attempt to enable the intelligent clayworker to better understand what a chemical formula means. Having an understanding of its meaning, he can be told several instructive facts regarding fire clay.

Moulding Ceramic Tiles to Give Flanged Edges



Andre Weill, of Brussels, Belgium, has received a patent upon a device or apparatus for automatically molding ceramic tiles with flanged edges for embedment in plaster. The application was filed May 5, 1910, the serial number being 559,464. The patent number is 1,005,383 and it is described as follows: An apparatus for making tiles, comprising in combination a means for receiving plastic mass, resilient supports for said means, a movable mold, means for bringing said mold into engagement with said receiving means and a stationary element coacting with said receiving means for transferring said plastic mass from said receiving means to said mold.

An apparatus for making tiles, comprising in combination, a container for plastic mass, a mold, means for reciprocating said mold with respect to said container in vertical direction, means for pressing the plastic mass from said container into said mold at one end point of the stroke of the mold and means for rotating the mold at the other point of the stroke of the same.

Questions and Answers

A DEPARTMENT FOR THE SOLUTION OF THE KNOTTY PROBLEMS CONFRONTING THE CLAY WORKER

This department was inaugurated to be of material benefit to the readers of "Brick and Clay Record" and no charge is made for the service given. The advice of the world's recognized authorities in ceramics is offered to clayworkers who are invited to avail themselves of the opportunity to have their problems solved here. Should a reply be desired by letter enclose a stamped and addressed envelope for reply.

Has Trouble Burning Sewer Pipe.

146. *Iowa—We are using a fire-clay for the manufacture of sewer-pipe and drain-tile, that contains a considerable amount of pyrites of iron and also shows a small percentage of lime; the clay is ground to a 16 mesh and is then put through the usual process of preparation. When the ware is put in the kilns, they are given from 5 to 6 days in burning, our object being to give the kilns a gradual increase in temperature from the start to the finishing point, which varies from cone 01 to 5; this variation may seem rather queer, but is accounted for by the fact that if we finish at cone 01, and keep a smoky atmosphere in the kilns, we can get fairly good glaze, but the pipe, especially the larger sizes, show a greenish color which is, of course, undesirable. Pipe finished under these conditions are very smooth.*

We have finished kilns at cone 5, maintaining oxidizing conditions at all times during the finishing process, and trial pieces drawn from kilns furnished in this manner show a good bright glaze and the ware is smooth; but 2 hours after finishing, this bright glaze has started to leave and continues to get duller and duller until at the end of 12 or 14 hours, the glaze is practically dead. If we burn to cone 5, and smoke the kiln intensely between the salting, we get a much heavier glaze and much better color, but the ware is so rough that it makes it almost worthless for the purpose for which it is intended.

We use an excellent grade of Illinois coal, the analysis of which shows it to be very low in sulphur.

What we would like to know is: Why we can not get a bright glaze under oxidizing conditions at cone 5, and have our ware smooth and why we get a better glaze under reducing conditions without having a rough pipe?

"Brick and Clay Record" referred the above problem to two different authorities on kiln construction and burning, and, since the opinions they give are somewhat at variance, we publish both; the first is:

By Anton Vogt, Consulting Engineer.

The fireclays generally used for making sewer-pipe are No. 2 or bastard fireclay, and in most cases contain considerable pyrites of iron, but in the above case it seems that by grinding it to 16 mesh, the pipe should not get rough under reducing conditions unless some coarse particles find their way into the wet pan, which is possible. But supposing this does not occur, then the fault is with the manipulation of the draft, it going to extremes, and in one case too much oxidizing, in the other too much reducing takes place. There is a happy medium between the two ways and this cannot be supplied through these columns. It takes a practical man, who has had similar experience, to be on the ground and apply his past experience and knowledge in such matters and learning the existing conditions by overseeing the burning of one or more kilns.

This correspondent states that the analysis shows a small percentage of lime. That may be true, as far as the sample that was analyzed is concerned. We know that clay from the same mine or deposit often varies in the different stratas and that the average clay used for the manufacture of the pipe may have considerable more lime or alkalies in other forms, than the analysis shows.

The same is true with coal; the analysis may show a small percentage of sulphur, but the coal that is used on the kilns may have considerable more, even if coming from the same mine. It's queer, but, nevertheless, it's a fact.

Why the man in trouble cannot get a bright glaze, a heavy glaze, under oxidizing conditions with a higher heat cone 5, is due to the fact, that the draft in the kiln at the time of salting is so strong that it carries most of the soda in the salt out of the stack. It slips off, instead of playing around the pipe to deposit the soda, uniting with the silica in the clay of the pipe's surface and that is the reason why he cannot get a heavy glaze under oxidizing conditions.

Why he can get a heavier glaze under reducing conditions is due to the contrary of what happens under oxidizing conditions. The vapors remain longer in the kiln, and have time to form the glaze and a heavier glaze is produced owing to the ware in the kiln being flashed more under reducing conditions than under oxidizing ones.

"But," he says, "the pipe are rough!"

This is due to several causes and no man can correctly define the cause without being on the ground to investigate the matter.

By Ellis Lovejoy, E. M.

The three conditions mentioned by your correspondent are as follows:

(1) Reducing kiln conditions finishing at cone 01 produces a fair glaze, smooth surface, with *greenish color.*

(2) Oxidizing conditions finishinfi at cone 5 develop a bright glaze and smooth surface but the glaze soon gets *dull after exposure.*

(3) Reducing conditions finishing at cone 5 result in better color, heavier glaze, but the surfaces are *very rough* (pimpled with iron-silicate spots, we presume).

We will discuss these in the above order.

A.—The greenish color in No. 1 is due to a combination of the lime and iron to form a lime-iron-silicate which is *buff* to *green* to *black* in color, depending upon the amount of iron present.

Lime in clay is most frequently present in the form of a carbonate (limestone) which under heat treatment is converted into calcium oxide, which we know as "lime."

In this form it can readily combine with other compounds, provided the other compounds are also in the proper state for such combination. Iron in the form of pyrite is a sulphur compound. Under heat the sulphur is driven off, leaving the black oxide which combines readily with other compounds, but if we have oxidizing conditions, we may convert the black oxide into the familiar red oxide which cannot enter into combination. Now under the conditions mentioned in No. 1 we get the lime and iron into the proper form and combination results producing the characteristic green to black lime-iron color.

In the presence of sulphur and moisture we get sulphuric acid which acts on any lime whatever its condition to form lime sulphate. In water smoking the kiln we have sulphur from the fuel, moisture from the ware, and lime in the ware, and thus we easily form sulphate of lime, or it may be that the sulphate is already in the clay or is formed in the process of drying. Under reducing conditions this sulphate of lime is broken up and when broken up can combine with the iron since in decomposing the sulphate we get the oxide as above mentioned.

Therefore, under reducing kiln conditions it matters not whether we have lime carbonate, oxide, or sulphate, the result in the end is the same.

Our experience is that salting at such low temperatures does not give a bright glaze and we are of the opinion that a better glaze will develop at the higher cone. We do not know of any way of overcoming the green color produced in No. 1 under No. 1 conditions.

B.—As mentioned in "A," the sulphate of lime (common scum) is or may be formed in the ware and probably accumulates on the surface. Under oxidizing conditions, even at temperatures at and above cone 5 this sulphate is not broken up and cannot enter into combination. It remains on the surface of the ware and prevents the fumes of the salt from coming in contact with the clay which it must do to get the necessary silica to form the insoluble glaze.

Scummed sewer pipe never glazes well and it is our observation that the glaze on scummed pipe soon loses its lustre after exposure but whether due to instability of the glaze through lack of silica or to some chemical reaction between the glaze and the underlying sulphate, we do not know.

C.—Under strongly reducing conditions prevailing in the kiln at cone 5, the sulphate of lime (scum) is broken up and the conditions are the same as in "A."

The grains of iron from the iron pyrite may be fully reduced but are not dissolved under the low temperature and time of No. 1 but under the higher temperatures, the grains enter rapidly into combination with silica to form an iron silicate which fuses, draws up into globules, and when near the surface of the ware, the globules protrude, forming the black pimples so common in many sewer pipe products. The lime, of course, is taking up its share of the iron but it cannot absorb the larger grains of iron or at least not rapidly enough, but instead we have the grains of iron taking up silica and probably also lime to form the globules.

At low temperatures the lime acts as a flux and predominates, while the grains of iron are largely dormant, but at higher temperatures the iron becomes the predominating flux locally at least where the pimples develop.

The amount of iron in these globules is so predominant over the lime that they are black while between the grains of iron we may have combinations of lime and iron with the green color.

We do not understand why there is not some evidence of the green color unless it be that the larger development of the iron at the higher temperature gives a general darker color and mantles the green color.

It seems to us that this correspondent must choose the least of the evils because we doubt if all the troubles can be overcome in the burning.

The lime content complicates the problem.

Where the trouble in rough surfaces is due simply to granular iron in the clay which would be the physical character of the iron in the form of pyrite, we can largely overcome the trouble by alternate oxidizing and reducing conditions. It must be borne in mind that at high temperatures even under oxidizing conditions, oxidization does not take place, but rather there is some reduction. We must get the full reduction at low temperatures. By the alternating treatment, we first reduce some of the iron, and this is oxidized, perhaps absorbed, or spread, we do not know. Following this we further reduce and again oxidize, and in this way completely destroy the grains of iron. Whatever the explanation, we find by this treatment that the rough surfaces are greatly lessened. In the presence of lime, however, the iron goes into combination with the lime and the green color is produced. Here we have a choice between smooth surfaces and green color. It will be remembered that during the reduction periods we are at the same time reducing the sulphate of lime and in the end leave the surface of the ware to take the full glaze desired. It is possible that the increased amount of iron that we get into general distribution and combination by this treatment gives enough darker color to mantle the green color from the lime and especially might this be true if the lime content is small. With the iron thoroughly scattered and the sulphate of lime broken up and dissolved, we may finish the burning and salting at a high temperature which develops the bright heavy glaze without the development of the pimples.

We overcome the difficulty entirely in the burning.

In case the scum is formed in the watersmoking it can be prevented by watersmoking with wood. To get the scum we must have sulphur, moisture and lime.

The sulphur comes from the fuel, the moisture from the ware and the lime is in the ware. The use of wood eliminates the sulphur until the water is all off, and then we may return to coal firing without any danger of scumming.

If the ware is scummed in the drying, which is often the case, especially if crop clays are used, and the drying is very slow, then the proper course would be to treat the clay with barium carbonate or hydrate to break up and precipitate the lime sulphate so it cannot escape to the surface during the drying period.

Since now under No. 2 conditions the ware is smooth and the glaze is bright, we believe that the glaze will be permanent if we eliminate the effect of the lime sulphate which can be done by the above chemical treatment.

There are then, it seems to us, two methods to overcome the troubles,—one being the alternate firing method to dissolve the iron and to break up and dissipate the sulphate, and the other is a chemical treatment of the clay to destroy the sulphate of lime followed by burning under oxidizing conditions which does not give the trouble with pimples. We hardly expect to get rid of the green color.

Color at Certain Heats.

155. *South Dakota—We would like to know what the color of heat in an up-draft kiln would be, at 650 degrees and at 800 degrees F. We have no pyrometer and so have to go according to the color of the heat in the arch.*

The color of heat at 650 deg. F. is not visible by day, nor can the heat even be seen in the dark, but at 750 to 800 deg. it can be seen as a sombre (dull) red in the dark. It cannot be seen in twilight and to be visible then, the heat must be about 880 deg. F.

To be visible by day the heat must be about 1,080 deg. and the color will be a very dark red, just beginning to show. At 1,292 deg. the color is brighter, but still dark red, and at 1,472 deg. it will begin to show cherry red. At 1,657 deg. it is full cherry red, and at 1,832 deg. the heat shows bright cherry red. At 2,012 deg. it shows dull orange and at 2,192 deg. bright orange. At 2,372 deg.

the color of heat is white, at 2,552 brilliant white, and at 2,732 to 2,912 deg. a dazzling white.

As our correspondent has no pyrometer, he can ascertain the deg. of heat at the different stages thus:

If a piece of lead melts in the arch, the heat is from 608 to 618 deg. F.

If a piece of zinc melts, the heat is from 680 to 779 deg. F.; aluminum, 1,157 deg. F.; yellow brass, 1,350 deg. F.; silver money, 1,796 deg. F.; copper, 1,929 to 1,996 deg. F., and if gold dollars melt in the arches, the heat is 2,156 deg. F. (Sometimes gold dollars do melt in the arches.)

Such methods of measuring heat are reliable only when the heat is exactly sufficient to melt the metals.

If the metals do not melt, we do not know how much less below the melting point of the metals the heat is, and if the metals melt, then we do not know exactly how much above the melting point of the metals the heat is. We can only judge as near as competent by the color of the heat. A portable pyrometer will be much more convenient and more accurate.

Wants Fire Clay Analyzed.

157. *Indiana.—We are desirous of having our ground fire clay analyzed and would like your suggestions as to the best authority on this kind of work. We would also like to know which of the books you publish will give us the best information as to the different uses of fire clay.*

The University of Illinois, at Urbana, Ill., the New York State School of Clayworking and Ceramics, Alfred, N. Y., the Ceramic Department of the Ohio State University, Columbus, Ohio, and the Department of Clayworking and Ceramics at Rutgers University, New Brunswick, N. J., are all equipped to give reliable analyses of clay; the Richardson-Lovejoy Engineering Company, of Columbus, Ohio, and Robert W. Hunt & Co., Insurance Exchange Bldg., Chicago, Ill., are equally trustworthy. Charles A. Searing, of Pittsburgh, Pa., who was formerly with the Harbison-Walker Refractories Company, might also be able to give you some information.

Regarding the different uses of fire clay, we advise your purchasing "Seger's Collected Works"—a condensed version of which is advertised in our book list, at $3.50, post paid.

"If it isn't Fiske, it isn't Tapestry"

166. *Iowa—We are making the ordinary tapestry brick here, as well as a very good quality of smooth wire-cut in varied shades.*

It is impossible for you to make tapestry brick or for anyone else to make them excepting Fiske & Company, Inc., or a plant which operates under Fiske & Company's license. You may make a brick which is similar in texture or color, or both, to one of the many varieties produced at Fiske's own factory at Ridgway, Pa., or at one of the factories it operates under license at some other point in Pennsylvania. But your brick is not a tapestry brick unless it is stamped with the word "tapestry"—and that cannot be done at any factory not owned or licensed by Fiske & Company, Inc.

"Brick & Clay Record" is emphatic on this point, as it knows that Fiske & Company has spent a great deal of money protecting its trademark and since it has taken every precaution to make that trademark secure, *the integrity of trademark registration, as applied to brick, rests on how strongly Fiske & Company maintains its right.* Every infringement of this right is an assault upon the structure Fiske & Company has reared with great care and expense and, at the same time, *assaults every other trademark applied to brick, without regard to the maker and owner of the trademark or copyright.*

The use of the word "Tapestry" as a descriptive term—meaning rough-face face-brick—cheapens the introductory work which Fiske & Company has done, lessens the value of the trade-mark it paid to obtain and maintain, and defeats the purpose of the first big publicity campaign ever inaugurated in connection with face-brick, a campaign that has benefited a large majority of the manufacturers of face-brick in the United States and Canada more, "Brick and Clay Record" is given to understand, than it has benefited Fiske & Company.

This campaign, while planned for the purpose of introducing "Tapestry" brick, was sufficiently broad to popularize every rough-face face-brick made, and for the actual good it has done the face-brick business, face-brick manufacturers should respect and protect the little that is left the men who did the work and who paid the bills. That little is the exclusive right to call their own brick "Tapestry" and to prevent any other brick being called by that name.

Some day, when as many different kinds of brick are being advertised as are soap, tooth-powder or cocoa, the decisions that Fiske & Company has won against unwitting infringers and against those who were not so innocent, will be used as precedents to establish rights in other brick trademarks (who knows but that you may be fighting for your own rights?) when brick trademarks are worth as much as those now used in connection with candy or chocolate.

Clay Cakes on Dry Press.

164. *Wisconsin.—We are having trouble. The clay cakes on our dry press brick machine, so we have to stop and sandpaper the metal after each thousand brick we make. This takes ten or fifteen minutes each time and you can understand that this is too much time to take out of each working day.*

On the modern dry press machine the upper and lower plunger and front and back tables are steam heated to prevent the sticking of clay to the cold iron. We believe that your correspondent's trouble is that he does not get sufficient heat to the upper and lower plunger plates on his dry press machine. This is a matter that can be easily overcome.

Wants Practical Brick Literature.

173. *Ontario.—We are interested in obtaining some technical work on brick and tile—not too technical to be understood, but a work by some authority, that a layman can read with profit. If you have any such work, we will be glad to have particulars as to price, etc.*

"Modern Brickmaking," by Alfred B. Searle, consulting expert on clays and clay products ($5.00 postpaid) and Seger's Collected Works, Condensed ($3.50 postpaid) are both authoritative and, while sufficiently technical to be of value in analytical work, are, nevertheless, sufficiently simple in diction to be easily digested by men whose knowledge of clayworking is practical, rather than theoretical. These books are advertised in "Brick & Clay Record's" Clayworkers' Library, where they were given a place because of their unquestioned value to men engaged in brick and tile manufacture.

Wants Ceramic Mosaic Tile Machinery.

161. *New York.—You will do me a great favor if you will furnish me with the names and addresses of manufacturers of machinery for making ceramic mosaic tile.*

"Brick & Clay Record" will be glad to know who makes a specialty of this kind of machinery and will furnish the correspondent's name on receipt of request.

The Superintendent

A DEPARTMENT CONDUCTED FOR THE INTERCHANGE OF IDEAS IN METHODS OF MANUFACTURE

Contributions from our readers are solicited for this department on any subject pertaining to the manufacturing end of the industry. Short cuts and labor-saving suggestions are particularly sought. Address all communications to the Editor of the Superintendent Department. Brick and Clay Record, Chicago.

TRYING THINGS OUT.

By C. R. Trowbridge, of the Dodge Mfg. Co.

The veteran engineer, John Fritz, tells how in his experience with the construction of various kinds of mechanical equipment, he would inquire if the apparatus under consideration had been made according to design, examined by men responsible for its details, and checked to the plans and drawings. Then, if the replies to these questions were satisfactory, he would says "Well then, start up and let's see why it won't work."

Like every experienced engineer, he realized that there might be some unforeseen difficulty lying in wait, ready to make trouble and require attention before smooth operation could be secured.

However skillful the designer and however careful the workmen, such troubles are almost inevitable. The plans of any construction may be prepared with all foreseen difficulities in mind; but the unexpected will happen, and no forsight can be expected to include everything.

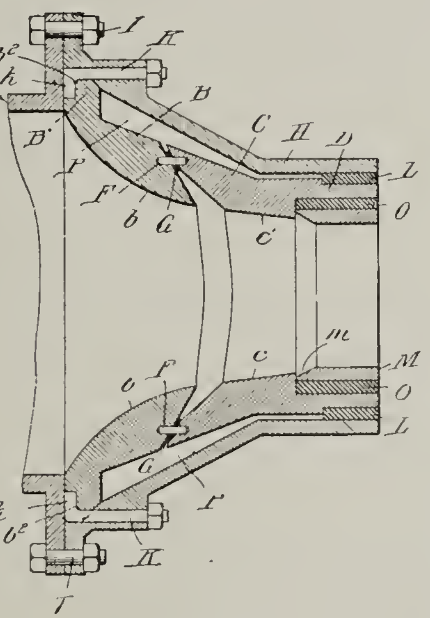
Such being the case, the careful engineer perceives a method of hadling this element in the problem, one which anticipates the possibility of a hitch, and remedies the delays and troubles which might otherwise occur. This plan is simply to erect and test the equipment in the works of the manufacturer, and thus ascertain and correct any difficulties before delivery and final erection in the establishment of the purchaser. In some kinds of work such a plan is impracticable, but in the great majority of cases, it is altogether possible to put parts together, and subject the work to an operative trial under conditions which remove all uncertainty.

There are numerous advantages in this method of procedure, apart from the obvious satisfaction which it gives to the manufacturer himself to be assured that his product is wholly complete. In many instances the location in which the apparatus must be placed when in actual service may be such as to render close inspection and test inconvenient, and any modification or adjustment, apart from that included in the design, may be made much more readily and accurately on the testing floor than in the customer's establishment. In any case the detection and location of any disturbance or impediment to smooth operation is comparatively easy when the whole equipment is erected and tried out under the keen eyes of the trained inspector. If an equipment has been once put together, tested, tried out under power and load, and critically inspected, the assurance of satisfactory operation in place is secured beyond question.

In addition to the removal of the possibility of troubles by following this process of shop erection and test, the method offers especial advantages in the effort to obtain maximum efficiency in operation. It is not sufficient that an equipment, such as a system of power transmission by shafting, belting, pulleys, clutches, etc., should merely work, and transmit and distribute power as desired. It should do this with a maximum of waste energy, which means a maximum degree of efficiency. Since the ultimate efficiency of any sequence of operations is obtained by multiplying the efficiencies of the successive elements, it is desirable that no element of low efficiency should enter into combination with others of higher value and thus reduce the efficiency of the whole.

When, however, the parts of a system are not erected and tested together before delivery, it is not always possible to determine the location of the elements of lesser efficiency, and thus an equipment which, to all appearances, may be working well enough in position, may be far less efficient than if it had been inspected, tested, and tried out in the shop of manufacture.

A useful tool for holding round stock by hand while grinding on a water stone can be easily made by cutting a V-notch in the end of a suitable piece of metal. Revolving the stock with one hand and pressing it against the wheel with the V-shaped tool results in a better job and is a safer way than the usual way employed.



Improved Mouthpiece that Should Overcome Die Lamination.

An invention that seems to have considerable merit and which should overcome die lamination troubles was recently granted a patent, the number being 995,622. It was filed April 1, 1910 (serial number 552,763), by James McLaughlin, of Riverdale, Ill., who assigned a half interest to Samuel T. Jacobs, of the same place. The description, as given in the Patent Office record, is as follows: In a brickmaking machine, a funnel-shaped forming device adapted to mold a stream of plastic material into approximately the desired cross-section of a brick, a die in the outlet end of the forming device having the desired cross-section of the brick, there being deep swells extending longitudinally of the forming device along the interior walls thereof, said swells decreasing gradually in size from the larger end of the device to the smaller end, said device being separated into two parts along a transverse plane between the ends of the swells, spaces arranged between the two parts of said device to hold the same apart and form an annular passage between the same, a housing surrounding said device and secured thereto at its smaller end, and fastening means between the housing and the larger end of said device for drawing said device into the housing and the two parts thereof toward each other, and means for introducing steam into said housing.

Face Brick

With few exceptions, the space devoted by the sales agency to the display of face-brick is badly planned. The prevailing idea seems to be the showing of as many panels of brick as is possible, the psychology of merchandising being lost to sight in the seeming desire to show as many different kinds of brick as is humanly possible.

The customer, exposed to a hodge-podge of sharply contrasting colors, is confused, becomes doubtful of his ability to make a good selection, and decides to "come in again," rather than leave his order.

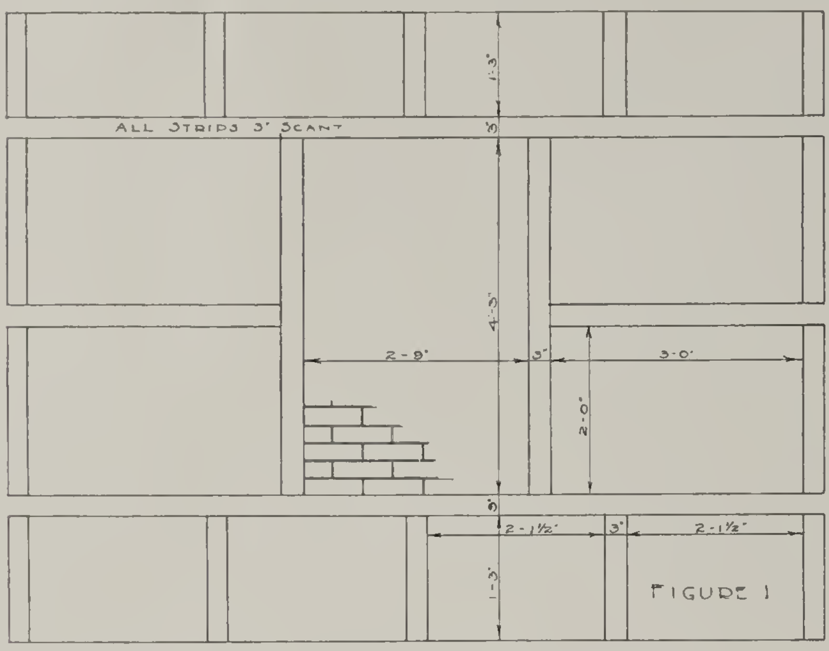


FIGURE 1

The difference between a "brick display room" and a "brick sales room" is as marked as is the difference in the number of sales made in the one, as compared with the other. Until the coming of "mingled shades" to the world of face-brick, "display rooms" served to impress the importance of the selling agency upon the prospective purchaser, rather than to aid him in selecting the brick he needed and which the sales-agency wanted to sell him. The larger and more costly the "display room"—the greater the number of "lines" shown, the "better equipped" (so the inference was) the agency to care for the customer's requirements.

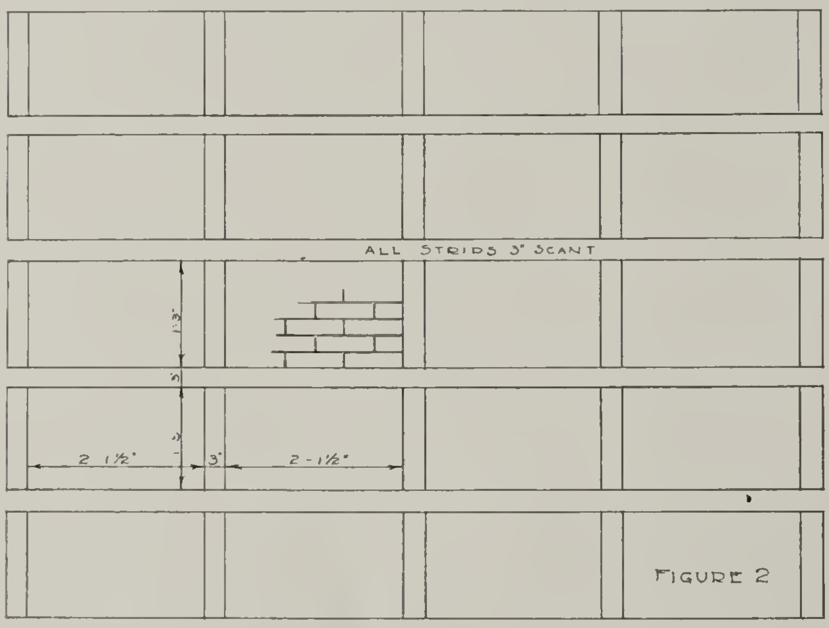


FIGURE 2

Now that manufacturers have shown a desire to give their "accounts" to agencies that represent no similar line (and this is an immense problem), an agency with a few "strong" lines is infinitely better off, in a trade sense, and really better able to serve its clients satisfactorily, than one which carries a more varied line, if the latter be made up of the product of small and irresponsible manufacturers. The service will be more uniform, more prompt and more apt to result in "repeat orders" than if entrusted to one of a number of small plants that suffer from "off-kilns" and a constant over-stock of brick that is "nearly the standard color" and a chronic shortage of the kind of brick the agency has taken orders upon.

Granting then, that the "display room" has ceased to have the old time value in the eyes of the man with an order to place, why not apply some common sense to its arrangement and make it a "sales-room"? Why not a room that will sell brick, instead of merely displaying them?

Diversify the size of your panels as in Fig. 1—not only to give prominence to the particular brick you want to sell, but to overcome the deadly monotony of the series of rectangles shown in Fig. 2. Imagine an art gallery where all of the pictures were of one size!

Give some thought to light. You may be, like many others, condemned to "display" your samples in a room where daylight comes from one side only. You know that rough-surfaced brick require a good light to bring out the texture and the soft play of color that is a part of your selling talk. Look for the point or points where the light from the windows is *reflected from the panel to the eye of the customer* and arrange your "sales-room" so that the panels that need the strongest cross-light will be at, or near, these points. For instance, in an arrangement such as is shown in Fig. 3, a customer standing at "C" or "D" will see panels "AA" and "BB" in the most favorable light; a table placed at "E" will help to keep him at "F," which is between the points where these panels will impress him most strongly.

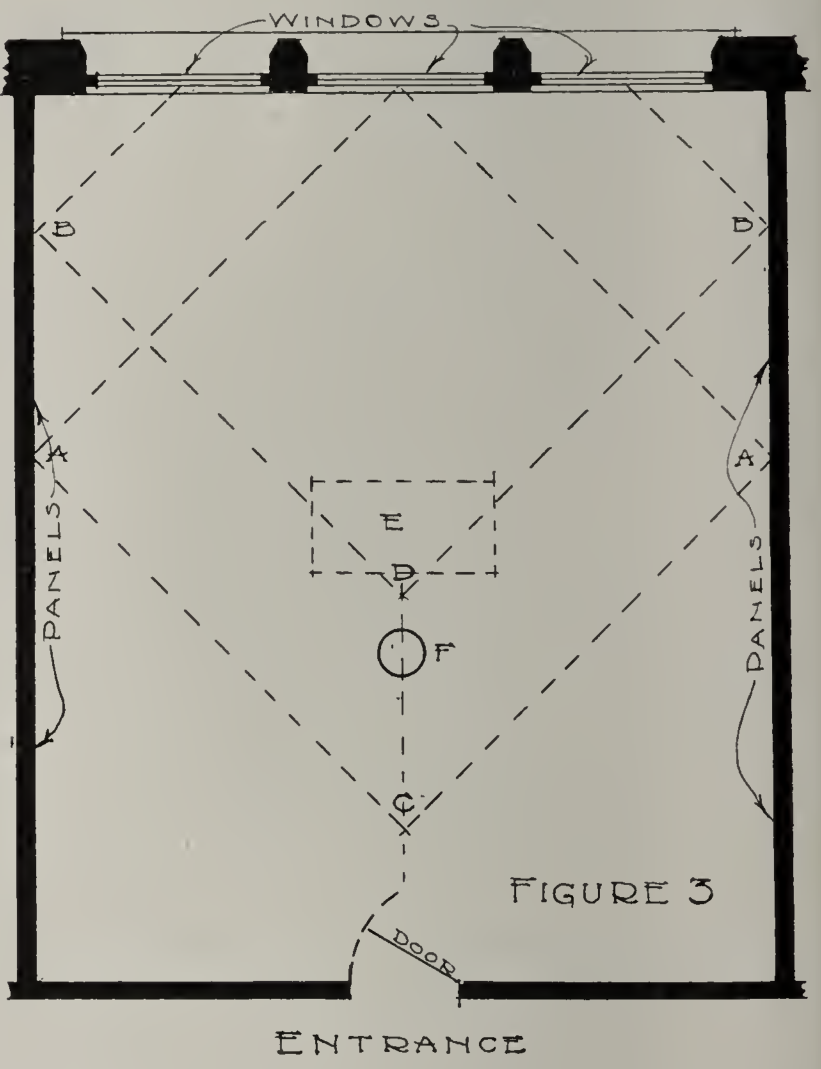


FIGURE 3

No matter what you may do in the way of a "display," the panels *will not look as well as the brick should look, when built into the wall of a building, where sunlight and atmosphere and contrasting trim bring out the colors and the mass blends the varying shades which give brickwork its chiefest charm.* Compensate this, so far as is possible, by selecting a color for your trim that will bring out the shades of the brick by contrast—nothing is better for this than a "mission" finish in dull dark-brown or brown-black, the dullness of the wood-work bringing out the brilliancy of the brick and the mortar-joint.

Do not show "freak" bonds. The customer will think they are necessary to make the brick look well and after his contractor has given him an idea of the extra cost of the fancy brickwork, will decide to use a brick that does not need a special bond to bring out its good points.

Finally—use colors in the mortar that can be reproduced in the building without adding to the cost of the brickwork.

Kiln and Burner

CORRECTLY SPACED FIRING HOLES.

By William A. Butler.

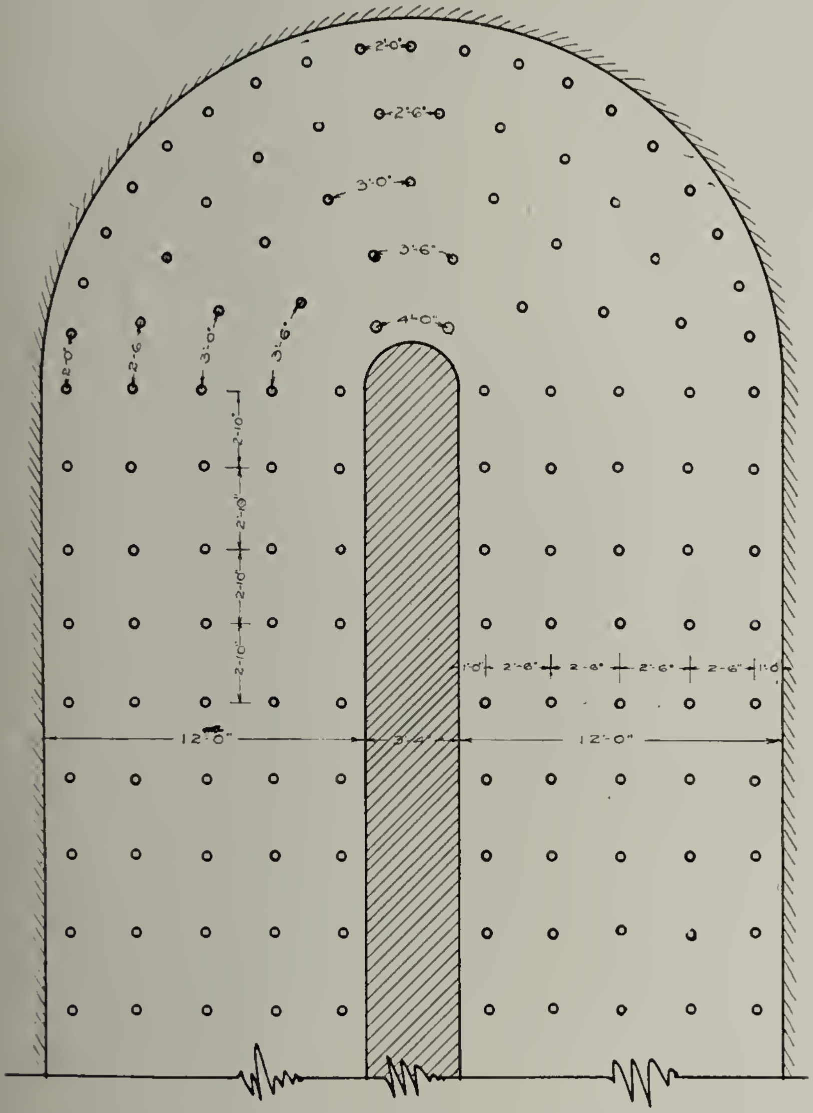
In a recent letter written by a "Missourian" to "Brick & Clay Record" asking about the spacing of fire holes in the crown of a 12-ft. kiln (continuous), he asks if four rows of firing holes across the 12 ft. space are sufficient. If the clay is of such a nature that it is easily burned and does not go out of shape or over-burn with an over-dose of heat, four rows will be sufficient.

But in the best practice five holes across is the number used. The average spacing for red burning clays is three and a half bricks (in length) across the kiln or 2 ft. 6 in. centers, leaving 1 ft. space at the walls and four bricks lengthwise or 2 ft. 10 ins. in the direction of the fire.

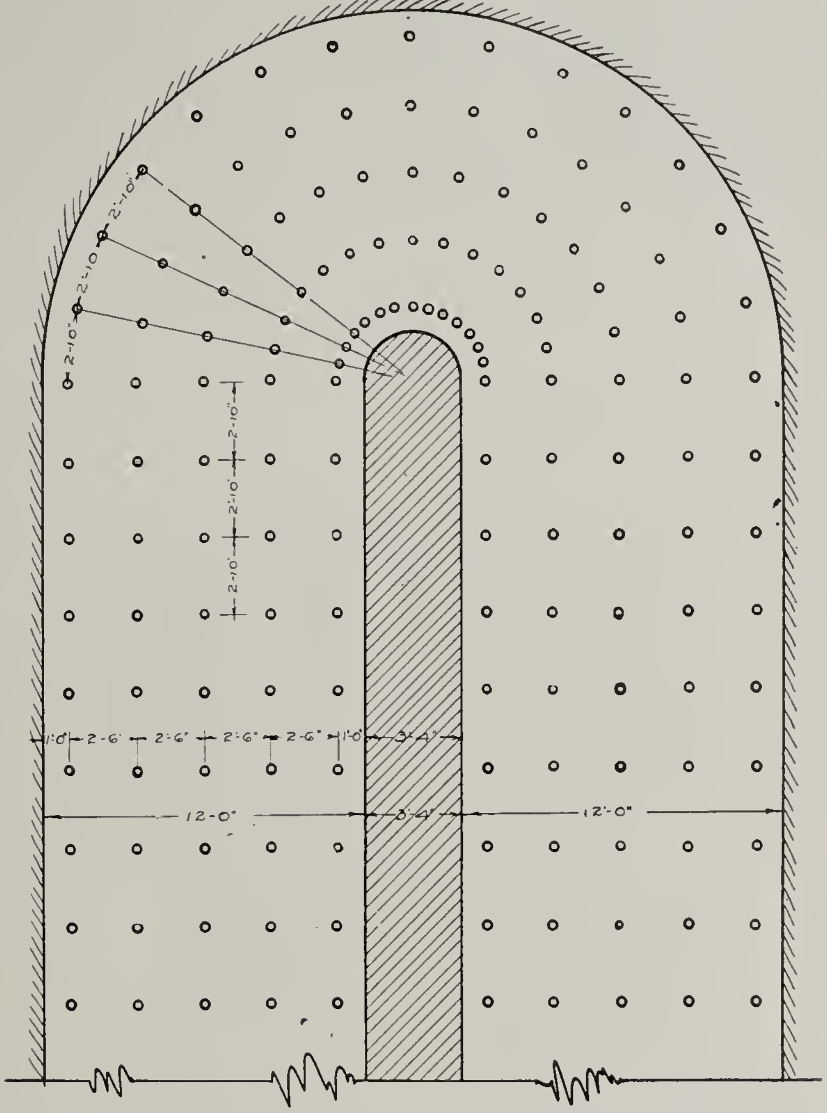
Where the fire holes are at too great a distance, the kiln must be fired so that the bricks in the firing holes are apt to be clinkered, in order that the bricks between may be burned to ordinary hardness. It is obvious that to err on the right side would be spacing the holes a little close.

Where the semi-circular end is used the firing holes on the outside ring or line of firing holes should be twice as close as on the inside. This will give the best burns and bring the fire across in the shortest period of time.

The movement of heat around the end will naturally follow the line of least resistance and if the firing holes on the outside row are not closer than the inside, it will be almost an impossibility for the coal to properly ignite or the burning operation of the outside rows to keep up with the inside firing.



Correct Method Of Spacing Of Firing Holes In 12'-0" Continuous Kiln



Incorrect Method Of Spacing Of Firing Holes At Ends Of 12'-0" Continuous Kiln

Clay Deposits of Missouri

From the making of the first sunbaked, crude pottery and adobe brick by the semi-savage to the manufacture, at the present time, of the finest Haviland china, beautiful terra cotta, and brick, the most durable of structural materials, has the use of clay been an important factor in the progress of all nations. Prosaic as they are, clay, stone, and iron, constitute the indispensable mineral resources of the world.

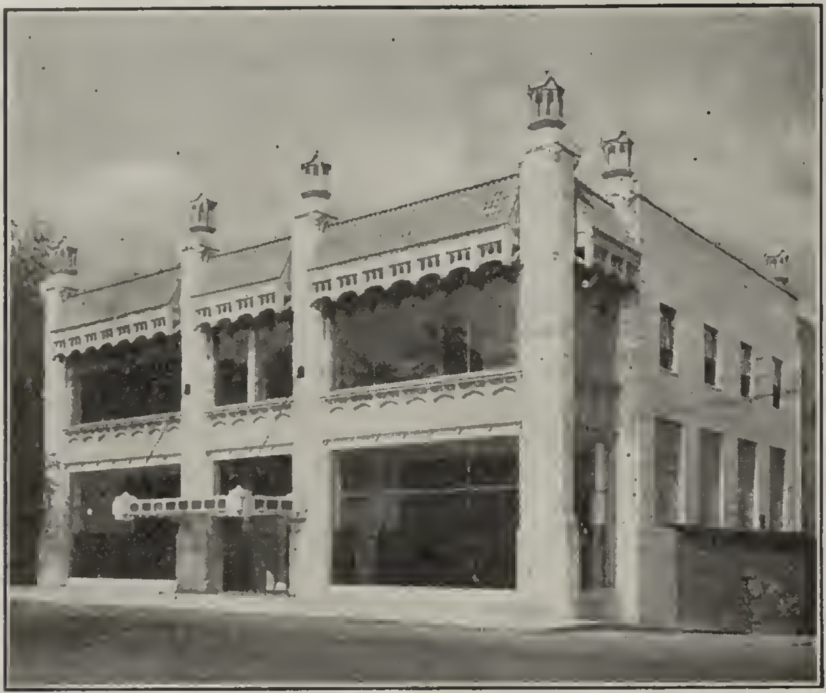
According to statistics gathered by State Geologist H. A. Buehler, the clay deposits of Missouri constitute one of the most important mineral resources of the state and upon them depends its extensive clay working industries, the output being valued at $6,786,441 in 1911.

Missouri is especially noted for its fire clays and is only surpassed by Pennsylvania in the production of refactory ware. Over 87,000,000 fire brick are manufactured annually from flint fire clays in the Central Ozarks and from plastic fire clay mined in St. Louis and in the eastern portion of the state.

The production of sewer pipe and drain tile stands next in value to fire brick, the output being valued at $1,321,019. Clays suitable for these uses are mined in southwest and north Missouri and near St. Louis.

Common and pressed brick clays are utilized in a majority of the larger cities, the industries being extensive along the Missouri and Mississippi rivers, the annual output of common brck being over 217,000,000.

Architectural Terra Cotta



Packard Motor Car Garage, Atlanta Ga. W. T. Downing, Archt. Entire Front of White Matte Glaze Terra Cotta, Furnished by the Atlanta Terra Cotta Company, East Point, Ga.

If brick, as has been claimed, is the "best of all building materials," then architectural terra-cotta is entitled to the slogan "the coming building material" and it is "coming" very fast. Harry Lee King, writing in "Architecture and Building," says that there are about twenty-five factories in the United States, the output of which is exclusively "art" or "architectural" terra-cotta. These are located principally in New York, New Jersey, Pennsylvania, Maryland, Georgia, Illinois, Indiana, and Missouri, and in the west coast states of Washington and California. Comparing this relatively small number of plants with the number producing facing brick (which runs well into the thousands) and considering the large number of important structures that are being faced, and have been faced with architectural terra-cotta during the past few years, and some idea of the growth of the terra-cotta industry can be gained. The oldest of the terra-cotta plants in this country was started less than forty years ago, so the industry is young, when compared to other clayworking processes.

The process of manufacture is fundamentally the same in all of the plants, though there is some variation in those started in recent years, due to the installation of improved methods and labor saving machinery. The art or craft is one that combines the highest form of sculpture in plastic clay with the technique of the potter-ceramist, since body, engobe and glaze, not to mention underlying glazes, have to be worked out in intricate formulae much as in the higher forms of pottery.

The result is a building material that withstands the action of the elements and preserves its integrity of color and sheen through snow and sleet, rain and dust, grime and dirt; it does not depend upon the "inevitable toning down process" that exponents of "life in brickwork" claim is necessary to make brick walls "grow old gracefully." It is of comparatively light weight, bulk and laying surface considered, and lends itself to architectural detail only possible in it and in stone, having the advantage of ready duplication and consequent economy over the material it most closely approximates—carved stone.

Are You Making Plans to Attend the N. P. B. M. A. Convention?

Engineers and contractors from many sections of the country are to gather at Cleveland, Ohio, September 17 and 18 on the occasion of the tenth annual meeting of the National Paving Brick Manufacturers' Association. In former years the Association has held its annual meetings during winter months, but at the last yearly assemblage of the paving brick manufacturers it was decided to hold future conventions during an "open season."

This will afford, instead of the usual program of written papers, a discussion and criticism of brick street and brick road construction methods while work on the highways is in actual progress. The large amount of construction work in Cleveland and Cuyahoga County, Ohio, will afford a splendid opportunity for investigation in a most practical way.

Chief Engineer Robert Hoffman and Paving Engineer Joseph Bayne, of Cleveland; Chief Engineer Frank R. Lander and Road Engineer James M. McCleary, of Cuyahoga County; State Highway Commissioner James R. Marker and W. A. Stinchcomb, county engineer elect, will help to make the occasion one of real value and interest.

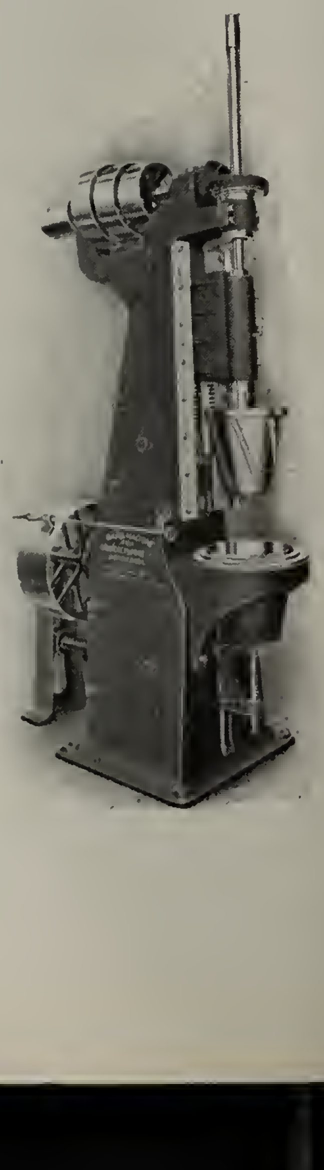
Automobile tours will be made over the oldest of the thousand miles of city streets and country roads which have given Cleveland and Cuyahoga County a wide name for permanent street and road construction.

At dinner on the evening of the 17th the occasion will be made enjoyable with informal talks on street and road building. Headquarters will be at the Statler Hotel.

Baird Automatic Pot Moulding Machine

In the July 15 issue of "Brick and Clay Record," which was devoted exclusively to machinery and equipment, there appeared an illustrated article by W. J. Baird, describing one of his recent inventions to improve the manufacture of flower-pots, cooking ware and stoneware, which had been exclusively a "hand-made" industry until the Baird invention was placed on the market. Through an error, a cut of the Baird pug-mill was used as an illustration, instead of the Baird Automatic Pot Moulding Machine. A cut of the moulding machine is shown herewith, as a matter of justice to the readers of this journal, as well as to Mr. Baird.

It might be added here, in this connection, that a similar error was made on page 140 of the same issue. Through an inexcusable error, a picture of the Fate pug-mill was printed, instead of one of the Fate auger machine, among the illustrations of modern types of brickmaking machinery.



Common Brick

Unless there is a radical change in market conditions in the New York district within the next few weeks, Hudson river manufacturers will be forced to close the 1913 brick moulding season earlier than ever before known. Under conditions ruling at the first of August the indications were that producers would be forced to disband their moulding organizations by the fifteenth of the month. About August 11 conditions changed a little and thereby opened up a little more space in the hacks and made available a few more barges or bottoms for storing purposes, but in view of the fact that the market is still sick, the relief was believed to be only temporary and that by the first of September the moulding season will have entirely closed on a majority of the yards in the North river district.

Down in Middlesex county in New Jersey where the Sayre & Fisher Company and other big brickmaking plants are located, the same basic conditions prevail, although the storage room is more elastic there and at this time there is no sign of a slowing down in the moulding departments. These yards, however, have been working with only about 55 per cent of their capacity since the season opened.

At the present time there are 36,000,000 brick available in the local wholesale market, which is quite equal to winter covered reserves and approximately 34,000,000 more than normal for this time of the year. When the bottoms that have been engaged to store brick and the barges that the manufacturers are sending down as overflow reserve from their piled-up yards arrive, it is freely predicted that the reserve supply of brick, available for immediate consumption in New York and vicinity will total 58,000,000.

With an estimated supply of 750,000,000 on hand in the North river sheds, it is apparent that manufacturers will feel that they have enough brick on hand now to take care of the demand for the balance of 1913 and the spring of 1914.

The annual production of brick in the North river district from 1905 to 1912 is given below, showing by way of comparison why 1913 may go down in brick making annals as the the year of lowest output in recent times:

	Total Output
1905	1,207,000,000
1906	1,198,000,000
1907	1,064,000,000
1908	875,000,000
1909	1,218,784,000
1910	1,102,265,000
1911	926,072,000
1912	1,019,259,000
1913	750,000,000

The figures given for 1913 represent estimated production for the season. There are 175,000,000 left over from 1912 output that is largely responsible for the crowded condition of the North river sheds today.

So much for the gloomy side of the market. Even the blackest clouds have a silver lining and so has the pall that now overhangs the eastern brick market.

The building code hearings are in progress. Absence of an avalanche of objection and political wrangle has been evidence aplenty in the eyes of those who are closely studying the building situation, that on the whole the code is considered fair. So far there has been no discovery of trickery or of giving one material a commercial ascendency over another. Everybody whose material has the least semblance of merit is getting a square deal.

While these discussions are in progress the fall renting season is under way and the leasing market is far more active than the buying market, which is considered an excellent omen for future construction. When September and October pass into history, owners of metropolitan district realty will find that the present rentable space has been largely taken, and since the real estate men always say that it is easier to rent a new building than an old one, it is generally expected that a large part of the 40,000,000 sq. ft. of metropolitan district floor space that was unrented on July 1st, will have been taken, and that there will be a renewed demand for new construction.

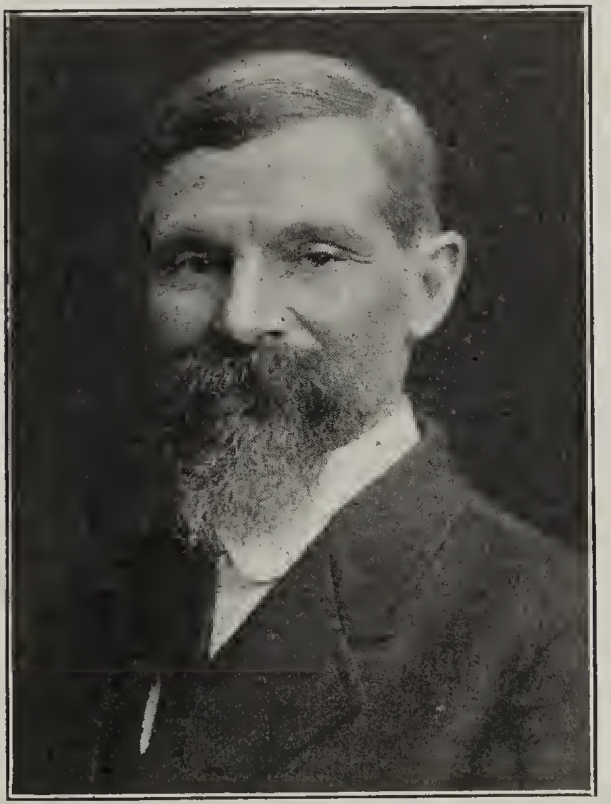
This resumption of building activity will probably take place as soon as the new building code is signed and becomes effective—that is, unless, as it is rumored will be the case, the new code will not be effective until July 1, 1914. In that event, there is every reason to believe that there will be a veritable construction boom, because the new code unquestionably increases the cost of construction and if owners can file their plans and begin operations before the new code becomes operative, the speculative element undoubtedly will jump in to take advantage of the saving in construction costs. This will stimulate the demand for both common and face brick.

The Eastern brickmakers are smiling, however, even under the adverse conditions they find themselves in, and although they do not see any signs of paying large dividends upon their earnings for 1913 at the present state of affairs. The lessees of brick yards, perhaps, are the exception. Their rent and royalty goes on whether the market is good or bad, but the future holds out so many bright promises that they apparently are showing a readiness to stand pat and work the hope pump to full capacity.

Who's Who in Clayland

Among the veteran brickmakers of Illinois, none, perhaps, is better known than George J. Walter, of Chatsworth. Born in New York City in 1852, he owns up to an honorable age of sixty-one years, half of which has been spent in clayworking. Many years before the N. B. M. A. was formed, Mr. Walter used to go to Springfield and attend conventions of a state Tilemakers' Association, and this gives some indication of how old this movement for association work really is.

Mr. Walter runs a yard that averages from $20,000 to $24,000 worth of brick and tile a year, employing about fifteen men. The equipment is an 85 h. p. Atlas engine, Bonnot dry-pan, a ten-foot pug mill, a revolving seive, an E. M. Freese piano-wire screen, and a "B-special" tile and brick machine, made by the same concern, also a hand cutter for both tile and brick. There are five down-draft kilns, 22 ft. and 24 ft. inside diameter and a dry-room with an area of 14,000 sq. ft., heated by 8,000 running feet of steam pipe. Altogether, Mr. Walter runs a nice little business in a nice little town. Incidentally, he does one thing that many owners of much larger plants, run in a much larger way and in much larger towns, do not do—he makes his plant pay.



GEORGE J. WALTER

With the Potter

Within a few weeks, the members of the United States Potters' Association will receive, from the officials of the National Brotherhood of Operative Potters, the proposed changes in wage scale that will be subjects for discussion at a joint conference of committees representing the two organizations, to be held after the tariff bill, now before the United States Senate, shall have been disposed of. W. E. Wells, secretary-treasurer of the Homer-Laughlin China Company, of East Liverpool, Ohio, and chairman of the labor committee of the manufacturers' association, has made this statement:

"If the rate of duty on foreign pottery is reduced, it will mean that the selling price must be reduced. The owners will not and cannot sell their output on a closer margin than they are today doing and if they must reduce prices, they must either close their plants or reduce wages. Just as surely as the workmen are getting every dollar of the protection today, they will have to stand every dollar of any reduction in duty that may be made. This threat is no bluff, but is the deliberate statement of one who knows what he is talking about. The same result occurred in 1894, and there is more reason for it now than there was at that time."

To the innocent bystander, the situation in the pottery trade presents some peculiar angles; the operatives demand higher pay—the manufacturers say that even the same rate of wages as that which is now being paid—let alone any advance—is out of the question if the tariff is lowered. With the chances about 90 per cent in favor of the tariff's being lowered, one could almost see labor trouble ahead—particularly as the current news carries item after item of shortage of labor—plants being compelled to close on account of the "scarcity of labor in the pottery trade." Yet there is a wider extension of equipment and more additions to present plants being built in the pottery trade than in any other industry in the country. Where other industries, affected only indirectly by tariff tinkering, are "lying low" and awaiting developments, the potters are adding to their buildings, their kilns and their machinery—increasing capacity in the face of impending labor trouble and what seems to be an almost certain action on the part of Congress.

Announcement has just been made of the plan to increase the capital stock of the Universal Sanitary Pottery Company, of New Castle, Pa., from $100,000 to $250,000, which means that the company will eventually more than double its output. It is also planned to hereafter use a new process in the making of sanitary ware in this plant, copied after a foreign patent, whereby it will cast its pieces instead of molding them by hand, thus creating a greater volume of production and at the same time making work for the employes easier. A better grade of ware is also expected to be produced. Of the $150,000 capital stock to be issued under the new allotment, $50,000 will be preferred stock bearing seven per cent cumulative dividends. Common stock will be given with the preferred stock sales in the proportion of a bonus of three shares of common with each block of five of the preferred sold. This company now employes 80 people, and it is planned to more than double this number. About $15,000 will be spent in increasing the capacity of the plant, by adding to the clay shops, installing additional machinery and the erection of more kilns. It is generally believed that the bulk of the new stock issue will be subscribed for in New Castle.

There is considerable trouble being encountered by the pottery manufacturers in the East Liverpool district in getting enough men to operate plants to capacity, and to keep those men at work who are on the pay rolls. It is openly asserted that the men will not work, and thereby production of general ware is curtailed to a considerable extent. The men claim that they have steady employment, have had no summer holiday, and that a few weeks' vacation will not harm them. On the other hand, the manufacturers claim that no one need loaf on account of orders, for the books are full of business, and the shipping departments are unable to get the orders out on time on account of the shortage of ware.

There is no labor trouble in the district of any kind, the workers merely wanting a summer vacation. The plants were not idle, except for the 4th of July period, when a lay-off of four days was ordered.

The Edwin M. Knowles China Company, of Chester, W. Va., which is erecting a 15-kiln plant in Newell, W. Va., will have, when that plant is placed in operation in January next, an annual production of close to $800,000 a year, making it the second largest pottery producing corporation in that state. The only larger pottery is that of the Homer Laughlin China Company, which has a production annually totaling over $2,000,000. The latter company operates 32 kilns in East Liverpool, Ohio, and by January will operate 47 kilns in Newell, W. Va.

Two new general ware potteries are being contemplated, according to reports heard in the western pottery district, one of which is to be built in Grafton, W. Va., and another in Mt. Clemens, Mich. The former plant is to be built from funds raised in Grafton through public subscription, and the latter in Mt. Clemens, is to be built by private capital, the business men from the latter place having made an extended investigation of the pottery interests in the East Liverpool and Newell districts, returned to their homes to make a detailed report to their associates. However, orders for machinery have not been placed, and until this is done, the absolute erection of the plants may be considered as in doubt.

It is said that there is not one branch of the pottery trade that is not connected with the National Brotherhood of Operative Potters. The Independent Union of Working Girls, employed in the potteries at East Liverpool, Ohio, and at Chester and Newell, West Va., composed of the girls working in the glost and bisque ware departments and in the wrapping rooms, has become connected with the big organization. This was followed by the clay makers forming a union and affiliating with the National Brotherhood.

H. N. Harrington, for several years in charge of the decorating department of the W. S. George pottery at East Palestine, Ohio, has left that firm to assume a similar position with the Steubenville (Ohio) Pottery Company. He is succeeded by F. E. Bycroft. The George interests have done nothing toward rebuilding the original George pottery plant, which was destroyed by fire more than a year ago.

The Edwin Bennett Pottery Company, of Baltimore, Md., has let the contract for the erection of two additional kilns, and made plans for further additions, the details of which have not, as yet, been announced.

NEW KAOLIN REFINERY.

Edista Kaolin Company Negotiating for Site on Tidewater in New Jersey.

Negotiations are under way in New York for the establishment of a large kaolin refinery to be located somewhere in New Jersey where tidewater shipping facilities are available, for the Edista Kaolin Company of 154 Nassau St., New York, and Samaria, S. C.

The company, which has been in existence for several years, has been working a kaolin deposit in South Carolina along moderate lines, but recent bores have shown that the deposits are far more extensive than the owner, Dr. O. A. Yearian, had supposed, and the Edista Kaolin Company was formed to develop it. The company expects soon to be in the market for a full steam shovel equipment and is already negotiating with a New York concern handling a by-product of clay-pits to jointly erect a refinery, probably on the meadows bordering the Newark bay or Staten Island sound.

The borings show a very rich deposit of kaolin suitable for use in porcelain and paper production running 38 to 40 per cent alumina and having a shrinkage of not more than 12.2 per cent, when fired to a temperature of 2,100 degrees. The officers of the company are Dr. O. A. Yearin, president; M. C. Penfield, vice president; J. F. Robinson, secretary and treasurer. The property has been in Dr. Yearin's family for several generations and only a few users of kaolin are being supplied with the product at present. A battery of steam shovels will be employed and a railroad spur extended further into the plant, so as to compete with the foreign market throughout the East.

Fire Brick

Under a recent order of the Canadian Commissioner of Customs fire brick 9 in. by 4½ in. by 2½ in. and valued at more than $19.50 per M., at point of original shipment (f. o. b. cars factory) are to be admitted to Canada free, under Tariff Item No. 281, until otherwise ordered. Fire brick valued at $19.50 per M. or less, at original point of shipment are held to be of a kind made in Canada, and subject to duty under Tariff Item No. 282. Tariff Item No. 281 stipulates that fire brick of a class or kind not made in Canada, shall be admitted free of duty.

The present order marks the third change in the customs treatment of fire brick under the Canadian tariff at present in force. By an order of March 20, 1907, fire brick valued at $10 or more per thousand were held to be entitled to free admission under Tariff Item No. 281; by a subsequent order, in effect May 8, 1908, the privilege of free admission was restricted to fire brick valued at more than $13 per thousand; while this new order still further restricts the free admission to those valued at more than $19.50 per thousand.

GERMAN SPECIFICATIONS ON FIRE BRICK.

The German Marine Office has set forth new specifications for refractory products, which should be of interest to engineers and those engaged in the manufacture of fire clay goods. Briefly, they require that:

(a) Fire Brick.

The material must consist of the best and most refractory grog mixture of lowest possible specific volume (apparent specific gravity). The brick must be burned to Seger cone 10 to 14 and must be of such compact nature that they can be cut with a sharp hammer without crumbling or breaking. Where no special dimensions are specified, the brick are to be furnished in the (German) standard size of 9⅞x4¾x2½ inches.

The brick must be true to shape and not warped or twisted, not varying from the specified dimensions more than 1%.

Class	Use	Spec. Vol.	Melting Point °C.	Seger Cone
No. 1.	For brick work coming in direct contact with glowing coals, or oil flames; for fire bridges, recuperators, and fire boxes, etc..........		1750°	34
No. 2.	For work only in contact with flames, as upper part of front and back walls of water tube boilers, etc.	1.2-1.5	1690°	31
No. 3.	For work not in direct contact with flames, as boiler setting, back of the fire bridge, etc.............	0.9-1.2	1580°	26

One piece in every 5,000 delivered shall be subjected to a fusion test, strength test and test for accuracy of dimensions.

(b) Fire Clay Mortar.

The mortar is to consist of a mixture of grog and bond clay and must be made in an approved manner. Its melting point must not be below cone 34 and it must be strong at cone 10. In all cases the value of the material will be determined by the samples taken for testing, but should these have been spoiled by too long storage under unsuitable conditions, this must be taken into consideration by the Naval Office.

The New Mexico Fire Brick Company is building two kilns of about 75,000 capacity each at Gallup, N. M.

The Fire Clay Development Co., of Chicago, Ill., has changed its corporate name to Locomotive Arch Brick Co.

The Federal Clay Product Co.
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Fire Brick for Kiln Work Made a Specialty

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Paving Brick

The necessity for building roads to suit the traffic they are to carry has frequently been pointed out, says "Good Roads," and has formed the subject of many discussions. That a road should be so constructed seems obvious, yet it is a fact that in a very large percentage of the road improvement work done, this most fundamental principle is not observed.

Besides negligence, there are other causes to which the unsuitable construction of many improved roads may be attributed. In the first place, it is a matter of some difficulty and expense to determine the traffic which will come upon an improved road. The determination of this involves not only a census for the purpose of ascertaining the traffic carried by the road which it is proposed to improve, but also the making of an estimate of the additional traffic which will be brought to it because of the improvement. And in the taking of a traffic census the character of vehicles using the road and the weight of single vehicles should be considered as carefully as the data on the amount of traffic.

Having made the best possible estimate of the expected travel, it is necessary to select the foundation and surfacing to be put down and decide upon the other features of construction that will give the best results under the existing conditions—not only of traffic but also of topography, climate and the like—bearing in mind, too, the amount available for construction and maintenance. These factors have to be considered together, if the best possible pavement is to be secured at the least possible cost. This, as any highway engineer knows, is a problem far from simple.

Of late years the art of building roads has been undergoing a change, and we have not yet reached the point where it can always be said that a certain kind of pavement is going to give the best results under given conditions of service. A new kind of traffic, automobile travel, must be provided for, and road builders are working with comparatively new materials and are employing new methods of construction. Roads of some of the types that are now being put down have not been in use long enough to demonstrate just what can reasonably be expected of them, nor are there sufficient data of cost and service to justify anything but the most general conclusions, except in some few specific instances. There is great need for experimentation with various types of surfacing under different conditions, and this work should take the form not only of putting down experimental sections, but of keeping the most careful and detailed records of their behavior in service. Much work of this kind has been done; yet there is little doubt that in many cases the construction of elaborate experimental sections has been followed by an inexcusable neglect to keep suitable records.

There is an almost universal demand for road betterment, and there are many evidences that the public—which has to pay for the work—is awakening to a realization of the need of better methods of financing road improvement. There remains, however, a more or less widespread lack of appreciation of the importance of building with forethought. And until the character of the surfacing to be laid down is determined with due regard to the use to which the roads are to be put and not by whimsical preferences, and until foundations are built for the loads they must carry, there will necessarily be large sums wasted in building roads unfit for the service they are expected to render.

The J. P. Morris brick plant has started operations at Coleman, Tex. It has an equipment of three kilns, each with a capacity of 65,000 brick and is turning out a very fine grade of paving brick, made from the famous "kidney shale" that is found in the vicinity of Coleman.

B. Frank Thomas has purchased the stock of Frank L. Bartlett in the Sterling Brick Company of Olean, N. Y., and succeeds Mr. Bartlett as president of the company. The plant is at East Olean, and manufactures vitrified paving brick.

County Superintendent of Highways Thomas N. Brennan, of Buffalo, N. Y., has joined with W. C. Perkins, former resident engineer of the State Highway commission, in recommending that the River road, from Buffalo, N. Y., to Lewiston, N. Y., be resurfaced with brick.

Floor and Wall Tile

Permanency is the first requisite of all structural material. Of what avail is soft-toned beauty—harmony of color and design—if time will even partially efface the color or the outline? What then, may be said of tile? Many an owner of an otherwise perfect house, finds, to his dismay, cracked and crazed tile becoming more and more numerous in his mantels, bathroom and kitchen walls and floors, to the inevitable mental reservation never to use tile again, and to warn his friends against it. The speculative builder, holding his house a while longer than he expected, is dismayed at the early signs of decay—that is what he calls it—never realizing that it is his fault, not the fault of the material, that has caused the unsatisfactory condition.

The best tiles, if laid on a poor foundation, will give unsatisfactory results, and tile makers are doing good work in circulating instructions to tile layers, for even though the manufacturer may never hear of the dissatisfaction his material is giving, he feels the result in the business lost to the tile trade in general, through the unsightly results given by poor workmanship in the laying.

A "good foundation" is one made of one part high grade Portland cement, two parts clean, sharp sand and four parts clean gravel. No cinders—the sulphur destroys the cement—no lime mortar, to make the mixture "run"—it weakens the foundations and makes the glaze, the stability and the beauty of tilework "run"—also. And the cement, sand and gravel should be used while freshly mixed. One of the common faults in laying is the desire to "save" the cement mixture of one day over until the next, in case too much has been made up to use at one time. It stands to reason this "over-night" cement has a chance to set—that some chemical and physical changes take place in it, rendering it a little different from the freshly mixed material that will be used with or near it. It makes, therefore, a spot in the wall or floor that is different from the other portions of that foundation or backing—we will not say weaker or stronger, but different—and it is in these spots that we look for—and find—defects in the finished tilework, some weeks or months after the "economical" contractor has receipted his bill.

Every ingredient of the cement mortar that is to form the foundation of good tilework should be dry—except the water—and that should be added after the cement, sand and gravel are mixed together.

Before the tiles are laid on the concrete floor or foundation, a little dry cement should be sprinkled over the top of the cement surface. Joints should be grouted with pure Portland cement, mixed with water, and the surface should be cleaned as soon as the grouting is finished. In laying floor tile, the mortar should be stiff enough not to work up between the tile. The tile should be firmly pressed into the mortar and tamped down with block and hammer until exactly level with the strips. The cement should be allowed at least two full days, to set. Then the floor should be well scrubbed with a clean broom and clean water.

A floor laid in this manner will not crack, nor will the tiles be apt to chip. If the floor beams are rigid and the building solidly constructed, the tile floor should last as long as the building stands. At least the tile-layer will know that he has done his part of the work as it should be done, and given tile—the material that he has to work with—a chance to make good with the man who is paying the bills.

New Parcel Post Rate August 15.

Under the new Parcel Post ruling, packages weighing as much as 20 lbs. can be sent through the mails and this, with the reduction in rates, will benefit makers of clay products. For instance, a brickmaker can now send three samples of face-brick (which seldom weigh over 6½ lbs. each) if the weight of the box and separators is not so great as to put the package over the 20 lbs. limit. The old regulation, which limited the weight to 11 lbs. made is impossible to send more than one sample in many instances, and as it is often necessary to send two or more to show variation, this meant a duplication of single packages, and a consequent high rate—too high to give the brick man any great benefit, when compared to the express rate on the same number of samples. The new rates and regulations will be in effect August 15.

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Many are not as good,
A few may be as good,
None Are Better

PATERSON
CLEARFIELD, PA.

Vitrified Shale Paving Blocks, Fire Clay Paving Blocks, Dunn Wire-Cut-Lug Blocks.

Paterson Clay Products Co.
Clearfield, Pennsylvania

Marion Brick Works
MONTEZUMA, IND.
MARION PAVERS

A Strictly High Class Paving Block

Also:
Fancy Face
Building Brick,
Colonials,
Antiques, Etc.

The Danville Brick Company
Manufacturers of
The Unsurpassed Danville Paving Block
DANVILLE, ILL.

LET US QUOTE YOU PRICES

Cars
DRYER and CLAY
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Koppel
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Sales Offices
New York—Pittsburgh—Chicago—San Francisco.
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Plant—Koppel, Pa.
Orenstein-Arthur Koppel Co.

Fire Brick Facts For Kiln Builders

Do not overlook the quality of Fire Brick used in inner walls, crowns and fire arches of your kilns; this is all important. When fire brick begin to give away the whole kiln is impaired.

No brick construction will stand under strain of gradual contraction account of poor quality fire brick.

Consult us in advance of placing your orders.

Davis Fire Brick Co. Oak Hill, O.

BRICK MAKERS
Many of the largest users in your line, after costly competitive tests and experiments, are now specifying—
Evens & Howard Fire Brick
BECAUSE OF
QUALITY, PRICE AND SERVICE
We will be pleased to furnish complete information and quote prices on request.
EVENS & HOWARD FIRE BRICK COMPANY
SAINT LOUIS

Established 1856
HENRY MAURER & SON
Manufacturers of
High Grade Fire Brick
Our "Henry Maurer" No. 1 quality Fire Brick is recognized throughout the country as a standard article. We make all shapes and sizes for kiln-work and all other requirements. Catalogues on application. We solicit your inquiries.
Office: 420 East 23rd St. New York, N. Y.
Works: Maurer, N. J. (On L. V. R. R. and C. R. R., N. J.)
Philadelphia Office: Pennsylvania Building

Machines and Equipment

A new brick and tile plant is in course of construction at Winlock, Wash., the plans for kiln and buildings having been prepared by the Denison Ceramic Engineering Company, of Cleveland, Ohio. A "Klose Kiln," 134 ft. by 34 ft. by 6 ft. deep, is being installed, and, contrary to general usage, instead of being built entirely under ground, is, owing to the kiln site's having a natural rise of 3 ft., half under and half above the surface. The kiln will have a capacity of about two cars (60 to 70 tons of ware) per day. The building covers the kiln and is 154 ft. by 80 ft., and has concrete foundations. Being built over the kiln, it provides a drying room wherein the heat from the kiln is supposed to dry the ware, but the Winlock Brick & Tile Company will not depend entirely upon waste heat for this purpose, having made connections with another manufacturing plant close by, for steam heat service when required. The power will be furnished by the Washington & Oregon Corporation, the machinery being operated by one 125 h. p. 600 r. p. m. motor. There will be no fire at any point in the plant, excepting that which is in the kiln. Despite this, an automatic sprinkler system will be installed, which will greatly reduce the insurance rate. The cost of the plant will be about $25.-000 and it is expected that it will be in operation by Sept. 15. It is equipped throughout with J. D. Fate machinery and will manufacture face brick, drain tile and partition tile.

At Missoula, Mont., a comparatively new company has purchased the holdings of A. C. Hollenbach and is operating an up-to-date hollow tile plant, under the corporate name of the Missoula Clay Products Company. The old equipment has been improved by the installation of a new tunnel dryer, heated by exhaust steam. This dryer is built of hollow tile and is of the latest type. The new kilns are of the Klose continuous type, constructed below ground and giving two compartments, about 10 ft. wide by approximately 100 ft. long, with flue between. The old buildings at the plant have been razed and replaced with modern structures of hollow tile.

Winslow & Co., of Portland, Me., have arranged to install new apparatus for electrical drive in its brick plant, including a 312 kv-s generator with 15 kw. exciter and switchboard in the power house, and six motors, ranging from 15 to 150 h. p. for power distribution in the plant. The equipment has been ordered from the General Electric Company.

The Tri-State Foundry & Machine Company is the new name selected for the former business of the Davis-Price Machine Company, at New Cumberland, West Va. The incorporators are Nathan Jacobs, Thomas J. Shaw, Robert M. Francey, all of Toronto, Ohio, Andrew M. Shetter and Fred. Graham, both of New Cumberland.

Joseph Morris, of North Wales, Pa., has started to make brick at that point, his yard's capacity being about 10,000 daily. He is anxious to secure catalogues on brick machines and appurtenances of the brick yard, so that, as he grows, he will be able to select his machinery intelligently.

The Auburn (Ia.) Brick & Tile Co. has contracted with the Dodge Manufacturing Company for a 150 h. p. rope drive. The contract includes Dodge hardwood lagging, transforming a fly-wheel into a driving sheave 156 inches in diameter, with thirteen grooves.

The L. E. Rodgers Engineering Co., 30 North La Salle St., Chicago, Ill., has issued a very attractive little book, descriptive of waste heat dryers and of the plants at which the Rodgers Company has installed them. The booklet is from the press of Kenfield-Leach Company.

The Workmen's Compensation Bureau, 80 Maiden Lane, New York, wants catalogues of brick and clay-working machinery, safety appliances and equipment.

The property formerly owned by the Walker Brick & Tile Company, at Dillonvale, Ohio, has been purchased by the Dovenshire Brick Company, of which George P. Wilson is secretary and manager. The new plant is being overhauled and made ready for operation, the product being red shale building brick.

The Letter Box

The following letter, from J. H. Zinn, of the Indianapolis, (Ind.) office of the Wm. E. Dee Mfg. Company, is an appeal to the building material dealers of his own city and contains some very excellent suggestions that should cause considerable reflection:

> Mr. Material Dealer, has it not occurred to you that the architect, contractor, building material manufacturer and dealer are jointly doing a real service for their community and for the country at large, that is not fully appreciated by the public?
>
> Take our own good city of Indianapolis, for instance, and you will see that visitors carry away with them a lasting memory of our Soldiers' and Sailors' monument, of our magnificent office buildings, our artistic bridges and public and private structures; we, having had some part in the building of these things, should have some pride in what seems to me to be a series of monuments to a worthy and honorable calling.
>
> But, like men in all other lines, we have our "troubles" and aside from the pleasurable pride we take in our business, we must remember that we are not in it for our health alone and that it is not always "easy and clear sailing."
>
> Would it not be fine, if all orders came to us unsolicited, likewise all collections? Would it not be grand if we all had a big line of customers who gave us their exclusive business and never "figured" with our competitors? Does it not make you a little "sore," sometimes, when you have made a "special price" to some fellow, in the hope of holding his trade, that you cannot get back to a price that will give you a decent profit, because he uses that "special price" with some competitor, claiming it is your "regular figure" and all too frequently succeeds in securing a "competing figure" from some other dealer, who, if he did not believe you were cutting prices generally, might keep his own at a profit bringing notch?
>
> I used to think that only a few contractors were guilty of such methods, but I have learned, to my sorrow, that many contractors, and not a few dealers, are far from being "above reproach." Sometimes it is, seemingly, done in all innocence, and the man who does it takes the position that he is doing someone a favor. Some good customers have voluntarily shown me competitive figures, but I have never asked anyone to do such a thing and would feel better if "favors" of this kind were not forced upon me, for I always feel that if a man shows me another man's figure, he is very apt to show some competitor mine. A combination of some kind or other, against these over-kind buyers, would seem excusable.
>
> Uniform prices by manufacturers and, in turn, uniform prices by dealers, is the desired goal toward which we should strive, without the formation of any unlawful trust or combination. Provision should be made to cover quality and quantity, for a customer should be able to buy 1,000 barrels of cement at a lower price per barrel than a customer who buys in lots of 50 or 100 barrels. Likewise the same price should not obtain upon an unrecognized or inferior grade of cement as does upon a recognized superior grade. This should apply upon all other building material.

The buyer who "peddles special prices" is doing his part, however ignobly, in hastening the day of the "open price competition"—a legal, sensible and practical way of eliminating the dark and devious way of the "cut-price specialist" and the man who makes his profit by securing so-called "special prices" in order, as Mr. Zinn says, "to hold his trade." "Special prices" are "cut prices" and are all too seldom based on either "quality" or "quantity."

THE DECKMAN-DUTY BRICK CO.
CLEVELAND, OHIO.
THE HOME OF "MEDAL BLOCK" AND THE BEST BRICK PAVED CITY AND COUNTY IN THE WORLD
"Licensee of Dunn Wire-Cut-Lug Block. The *Best* and most suitable form of *Paving Block* for *Road Way Improvements* in use with the *Cement Grout Filler.*"

FIRE BRICK
DOVER FIRE BRICK CO.
Incorporated 1870
—— MANUFACTURERS OF ——
Dover and Buckeye Fire Brick
Unexcelled for Kiln Purposes
509 Cuyahoga Bldg. Cleveland, Ohio

AJAX
FIRE BRICK

Two of the many hundred kilns built of these famous brick. Are you using them?
Write for price and catalogue.
Chicago Retort & Fire Brick Co.
195 So. Clark St., CHICAGO

THE RICHARDSON-LOVEJOY ENGINEERING COMPANY
COLUMBUS, OHIO
CERAMIC ENGINEERS
FACTORY ARCHITECTS
Geological Examination of Properties
Clay Testing
Investigations of Manufacturing Propositions
Plants Designed, Construction Superintended and Operations Directed
Driers, Furnaces, Kilns
Remodeling Old Plants Given Special Attention
Development of New Lines of Products
Pamphlet, "Ceramic Engineering." Free

Are Your Freight Rates Satisfactory?
Did it ever occur to you that your competitors in many instances have rates that are predicated upon a more equitable basis due entirely to the aggressiveness of expert traffic men?
We have in our employ men who thoroughly understand these vexatious traffic problems and are prepared to assist you in every possible manner.
Results Produced or No Charge
GENERAL TRAFFIC ASSOCIATION, Inc.
715 14th St., N. W., Washington, D. C.

"Buckeye Rails Are the Standard for Quality"
THE BUCKEYE ROLLING MILL COMPANY
Exclusively Manufacturers of First Quality Light Steel Rails and Accessories
Offices: Steubenville, Ohio
Mills: Newark, Ohio
BUCKEYE MEANS BEST
BEST MEANS BUCKEYE
All Sections from 12 lb. to 40 lb. per yard
Write or wire us, when in need.
No order too large to handle promptly or too small to secure immediate attention.

Absolute Control of Temperatures in all Kinds of Kilns and Furnaces
Heraeus Le Chatelier
PYROMETER
Recommended by the highest authorities
For measuring temperature between 0 and 1600 deg. Celsius, equal to 2920 deg. Fahrenheit. Successfully used in establishments for the manufacture of Brick, Pressed Brick, Terra Cotta, Pottery, Porcelain, Stoneware, Chamotte, Cement, Glass, Iron and Steel and other metals, particularly for Hardening and Annealing, also for Molten Metals, Cartridges and Ammunition, Chemicals, Gas Accumulators, and by Boiler Inspectors, Schools and Colleges.
Heraeus Patented Electrical Furnaces
For Laboratory and Experimental Use
Fused Silica Ware of Every Description at Moderate Prices
Heraeus Patented Fused Quartz Glass Articles
of every description. This Heraeus Patented Fused Quartz Glass is not affected by any changes of temperature whatsoever, and the co-efficient of expansion is only 1-17 that of platinum. It is of the utmost importance for all purposes where the above qualities are essential. Write for information. Pamphlets and References on Application.
CHARLES ENGELHARD, Hudson Terminal Bldgs. 30 Cortlandt St., NEW YORK CITY

Sewer Pipe

Standard specifications for drain-tile and sewer-pipe have been draughted by a committee of the Iowa State Drainage Association, consisting of Director A. Marston, of the Iowa State College, Division of Engineering, Seth Dean and W. B. Warrington. These specifications are intended to obviate the danger of cracked tile and pipe in ditches, and are based upon data collected during six years at the experimental station at Ames, Iowa.

The specifications provide that the absorption for drain-tile shall be between 6 and 7 per cent and for sewer-pipe, 4 and 5 per cent.

If the average bearing strength of the pipe, per lineal foot, is not equal to at least 165 per cent of the ordinary maximum loads on pipes in ditches, as shown in the table given below, it must be strengthened by being imbedded in concrete.

For Clay and All Common Soils and Combinations of Soils, Except Sand and Loam.

Maximum Loads on Drain Tile and Sewer Pipe in Pounds per Lineal Foot of Tile or Pipe

Height of Fill at Top of Tile or Pipe	Breadth of Ditch at Top of Tile or Pipe				
Feet.	1 ft.	2 ft.	3 ft.	4 ft.	5 ft.
2	210	470	730	1,000	1,240
4	340	840	1,330	1,870	2,370
6	430	1,140	1,800	2,630	3,410
8	490	1,380	2,360	3,360	4,400
10	520	1,570	2,760	3,980	5,270
12	540	1,730	3,100	4,560	6,050
16	570	1,940	3,660	5,510	7,440
20	580	2,090	4,070	6,280	8,610
24	580	2,180	4,380	6,910	9,590
30	580	2,260	4,700	7,590	10,780

For Sand and Loam, Unmixed with Other Soils.

Maximum Loads on Drain Tile and Sewer Pipe in Pounds per Lineal Foot of Tile or Pipe

Height of Fill at Top of Tile or Pipe	Breadth of Ditch at Top of Tile or Pipe				
Feet.	1 ft.	2 ft.	3 ft.	4 ft.	5 ft.
2	180	410	650	890	1,110
4	270	710	1,170	1,640	2,100
6	310	910	1,590	2,270	2,970
8	340	1,070	1,910	2,280	3,720
10	350	1,180	2,180	3,260	4,380
12	360	1,250	2,400	3,650	4,980
16	360	1,350	2,710	4,260	5,940
20	360	1,400	2,910	4,700	6,660
24	360	1,430	3,050	5,010	7,230
30	360	1,440	3,150	5,340	7,830

When strengthened thus, the bottom of the ditch is shaped to fit the lower quarter of the tile or pipe and is filled with a layer of soft concrete at least two inches in thickness. The concrete shall be made of one part Portland cement to eight parts of gravel or one part Portland cement, five parts sharp sand and eight parts of broken stone.

No drain-tile or sewer-pipe shall be used in any case where the average bearing strength per lineal foot is less than that specified in the following tables:

Minimum Allowable Average Bearing Strength in Pounds Per Lineal Foot.

Internal Diameter.	Drain Tile.	Sewer Pip
Less than 15 in.	1,000	1,250
15 to 20 in.	1,250	1,500
21 to 27 in.	1,500	1,900
28 to 36 in.	1,850	2,400

All tile and pipe shall be sound and of first quality, free from cracks and checks. The average diameter of the pipe shall not be more than 2 per cent less than the specified diameter, and no two diameters of the same pipe shall differ from each other more than 7 per cent, in the case of drain-tile and 5 per cent in the case of sewer-pipe. No drain-tile designed to be straight shall vary from a straight line more than 1½ per cent of its length and where sewer-pipe are concerned, not more than 1 per cent.

Sewer-pipe shall be vitrified and thoroughly salt-glazed inside and out and be free from bumps and broken blisters. They shall be of the hub and spigot pattern and the bells shall be of such sizes that there will be an annular space for cement of at least ⅜ in. thickness for 8 to 10-in. pipe, and ½ in. for larger sizes.

Hollow Block

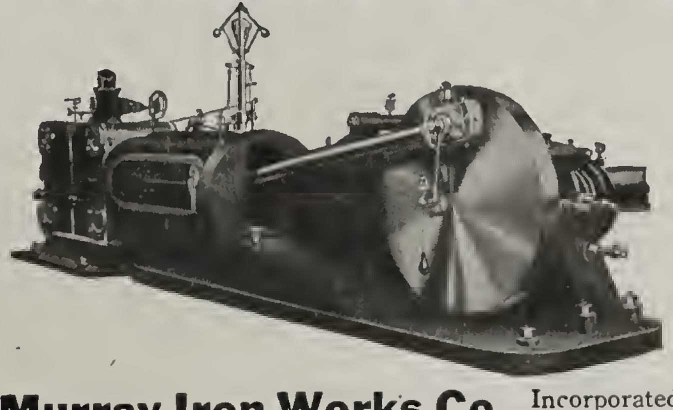
While the manufacturers in various branches of the clayworking industry are suggesting standard tests for the materials they are making, and in many cases, adopting standard specifications governing their proper use—as, for instance, paving brick—there is considerable confusion as to a proper nomenclature, to obviate the necessity of a detailed description at every step of the way the specifications tread. In the Trades Unions "jurisdictional" disagreements cause strikes and lockouts, all of which should be unnecessary, yet are, unhappily, of constant occurrence. Some of these disagreements could be simplified, it would seem, if the proper names were given to materials. When does a sewer-tile become a sewer pipe? Both may be of burned clay and the question seems to be one of size—of length and of inside and outside diameter. A recent writer of advertising literature sent out a booklet entitled "Why is a Brick?"—he might better have asked "What is a brick?"—a question that has caused many costly arguments and learned decisions before and on the part of the Interstate Commerce Commission.

"Fireproofing"—consisting of "hollow blocks," "hollow tile," "wall tile," "partition blocks" and "partition tile" is called "terra-cotta"—leaving the highly artistic ornamental, glazed and colored material that faces our skyscrapers no authoritative name save "architectural terra-cotta." Blocks or tiles, made of soft clay and with holes running parallel with the exposed surfaces and designed for interior partitions, floor arches and furring, have been recognized as "hollow block" or "hollow tile" irrespective of the dimension, and, until recently, could have been designated by some term that would indicate their constructional purpose, somewhat along the same line as "common" brick is understood to be a "backing-up" and constructional material, as compared to "facing" brick. But now the "hollow tile" man is in the market with a "hollow facing block," to be used on the exterior of buildings (and, for that matter, in the interior) without additional finish. Here, if anywhere, a "standard nomenclature" is needed—and needed badly, if "fireproofing," "hollow tile" and "hollow block" specifications are to be written in a reasonably small number of pages.

On another page, announcement is made of the reduction in Parcel Post rate and the raising of the limit of weight, so as to admit packages weighing 20 lbs. In view of this concession to popular need, the following letter, received some time ago, from W. S. Cochrane, secretary Midland Brick Company, Peru, Kas., is particularly pertinent.

> We are pleased to note your continued campaign for co-operation among clayworkers. This is certainly the very most important thing for the brick making end of the clay working industry to do today. There are a score of ways in which co-operation would be beneficial; advertising is but one of them, but probably the most important. Transportation of products is another almost equally important matter. Along this latter line, allow us to suggest that were all brick makers (those making face, commons, pavers, fire brick, etc.), to work together they should not only be able to gain a still further reduction of express rates on sample brick, but when the Parcel Post law is worked over they should see that the weight limit is raised to, say, 15 pounds with the present rate for 11 pounds to be the rate for the higher weight. With the 11-pound limit but very few, if any, face, paver or fire brick people can ship more than one sample brick in a single package, whereas the 15-pound limit would practically take in all brick and permit of two brick being shipped. There would be plenty of co-operation among other lines of business were such a thing as the above started by the brick men. Trusting your great campaign for co-operation and publicity, etc., may result in the getting together of clay products people all over our broad country, we remain,

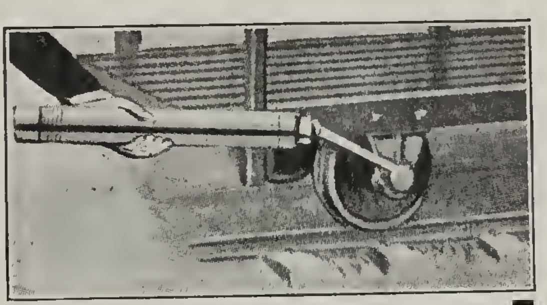
POWER PLANTS COMPLETE
CORLISS ENGINES, WATER-TUBE AND TUBULAR BOILERS



Send for Catalogue No. 65-B

Murray Iron Works Co. Incorporated Feb. 1, 1870 BURLINGTON, IOWA

Use Toco "Kiln Car" Grease and Save Time, Money and Trouble



"The Better Way"

Toco "Kiln Car" Grease will not melt or run off the journals of rack cars when used in the intense heat of dry kilns. Applied with special grease gun, which we furnish with barrel or half-barrel orders.

Write for prices.

THE TROPICAL OIL CO.
CLEVELAND, O.

We Manufacture Everything Needed For Dryer Installations.

Our Dryers Get RESULTS.

Trautwein SYSTEM OF WASTE HEAT DRYING

When the Best is Required, Consult Us.

We Are Clay Works Engineers.

TRAUTWEIN DRYER & ENGINEERING CO., 417 S. Dearborn St. Chicago, Ill.

PERFORATED METAL SCREENS
As required for BRICK MAKERS USES.

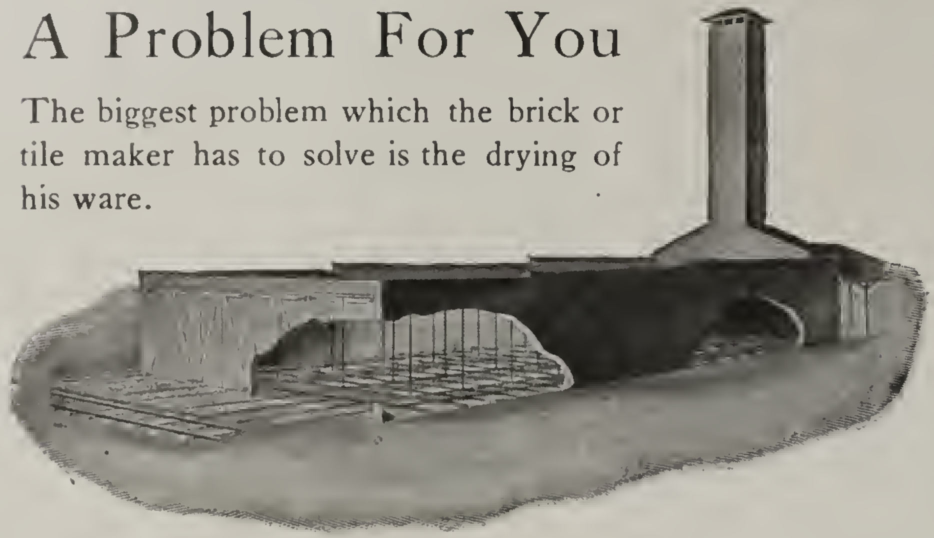
PERFORATED SHEET METALS OF EVERY DESCRIPTION
HENDRICK MANUFACTURING CO.
CARBONDALE, PENNA.

New York Office Room 1028 Cortlandt Building

Manufactured by
HENDRICK MFG. CO.
CARBONDALE, PA.

A Problem For You

The biggest problem which the brick or tile maker has to solve is the drying of his ware.



The National System

offers the only *sure* solution. Through its installation you can run your yard the year around, and do your drying in the quickest, best and most economical manner.

Write for particulars regarding our proposition.

The National Dry Kiln Co.
1118 E. Maryland St., Indianapolis, Ind.

The Martinsburg Brick Wagon Saves 1-2 Hour on Every Load

Some say even more, and it doesn't require experienced help to handle the load. Just release the lock by "a twist of the lever", and give the body a little push—it does the rest.

The load **slides** out and the brick are not chipped or broken. You can handle either **common** or **face brick.**

Capacity 1200 to 2000. Full cut under, short coupled and one-third easier draft.

AUBURN WAGON CO.
450 Race St. Martinsburg, W. Va.

Freight Tariffs

Perhaps the most prolific cause of overcharge in freight—that is, the charging of a higher rate per ton for the transportation of merchandise from one point to another, than the same merchandise should carry—is due to mis-routing. This is done by the freight agent at the shipping point sending the car over the route that gives his own company a larger proportion of the haul than it would receive, were the car billed over a route which, being more direct, would, in many cases, give the shipper a better rate per ton. It has the added disadvantage of keeping the car on the road a longer time, involves, in many cases, more switching (and consequently more jarring of the goods shipped), with added chances of chipped brick, or other clay products.

Shippers cannot expect the local agent to act for their interests when he is paid to look after the interests of the company that employs him. Instructions on the bill of lading which give specific transfer points are apt to "stir up the animals" in the local freight office, and will lead to the question, "Why can't you let us handle that shipment by way of ———ville?" If the shipper has definite knowledge that shipping by way of another town will give him a better rate, he will find that the local agent will be very glad to "look the matter up," and, by applying to his division freight agent, have a rate published that will "compete"—that is, he will secure you a lower freight rate over his own road than he would have charged you, had you been ignorant of the fact that, by shipping in some way other than that which he would have advised, you could save some money for yourself or for the man to whom you had made the sale.

Do not, under any circumstances, depend upon the local freight agent to give you any advice that will interfere with his own company's getting a "long haul," even though a better route and a better rate—that is, a lower rate—is in existence. He is not paid to serve you, if in that service, he cuts his own company out of a single cent of revenue.

Since the last issue of "Brick and Clay Record" the following rates, applying to various clay products, have become effective:

From Eastern Points.

From Atlantic City, Bakerstown, Egg Harbor, Mays Landing and Winslow Junction, N. J., Brick, to Connellsville, Pa., 14c per cwt.

From Beech Creek, Bigler, Clearfield, Clymer, Faunce, Irvona, Karthus, Krebs, Lock Haven, Lumber Mahaffey, Mill Hall, Monument, Orviston, Patton, Phillipsburg, Snow Shoe, Wallacetown and Woodland, Pa., Brick, and articles taking same rate, to Cuba and Farmdale, Ill., 15c per cwt.; to Hamilton, Ill., 18¼c per cwt.; to Holland, Waterville and Whitehouse, Ohio, 11⅛c per cwt.

From Corning, N. Y., common brick and flat flooring or roofing brick, to Taylor, Pa., 6⅛c per cwt.

From Southern Points.

From Fort Gaines, Ga., Brick, to Jacksonville, Fla., 6¼c per cwt.

From Middle West Points.

From Chicago, Ill., Brick, to Tontogany, Ohio, 7½c per cwt.

From Western Points.

From Arcadia, Fredonia, Fort Scott, Neodesha and Pittsburg, Kas., and from Liberal, Mo., Brick (except bath, fire and enamel), fire clay and hollow building tile, to Guthrie, Okla., 7c per cwt.; to El Reno, Okla., 9c per cwt.

From Caney, Chanute, Coffeyville, Fredonia and Independence, Kas., Brick, to Cuba, Kas., 9½c per cwt.

From Coffeyville and Independence, Kas., Brick (except bath and enamel) fire clay and hollow building tile, to Norton, Kas., 15½c per cwt.

From Fredonia, Kas., Brick (enamels) to Beatrice, Neb., Council Bluffs, Iowa; Lincoln, Nebraska City, Omaha and South Omaha, Neb., 15½c per cwt.

From Pittsburg, Kas., Brick, paving brick and paving blocks, to Helena, Ark., 10c per cwt. Basis 2½c to Joplin, Mo. (combination).

Sand-Lime Brick

THE SAND LIME BRICK ASSOCIATION.

Headquarters, 211 Fillmore Avenue, Buffalo, N. Y.

President, S. O. Goho, Harrisburgh, Pa.
Vice-president, F. B. Allan, Toronto, Ont.
Secretary, W. E. Plummer, Jr., Buffalo, N. Y.
Treasurer, John L. Jackson, Saginaw, Mich.

Executive Committee.

G. Silvester, Calgary, Alta.; E. G. Chapman, Minneapolis, Minn.; E. M. Burchfield, Rochester, N. Y.; H. H. Tifft, Tifton, Ga.; L. W. Penfield, Willoughby, Ohio.

Reports received from Syracuse, N. Y., would indicate that the business being done in that city by the sand lime brick men is all that could be desired. Among the contracts now being served or which were recently finished by the Paragon Plaster Company are:

Salmon River Power Company, Altmar, N. Y., about 200,000.

Warehouse for H. W. Balsley, Syracuse, N. Y., about 350,000.

The Eckels Company's office building and theatre, about 300,000.

The Poultry Building at the State Fair Grounds, about 250,000.

Dey Brothers building, about 500,000.

W. K. SQUIER

W. K. Squier, secretary and treasurer of the Paragon Plaster Company, states that the small trade—the "steady consumers"—are increasing in number every year and that the future of sand lime, so far as Syracuse is concerned, is favorably assured. The building mentioned in the preceding paragraph, as being erected at the State Fair grounds, is the third that the Paragon Plaster Company has furnished with sand lime brick—the first in 1910 and the second two years later.

Regarding the sand lime brick industry in so far as the Buffalo, New York, market and vicinity is concerned, the Buffalo Sandstone Brick Company has had no trouble in disposing of its output and has orders booked ahead which will keep its plant running full force until Jan. 1, 1914, at least. It is, at present, delivering 300,000 brick for a factory to be erected by the Beaver Board Company, and has furnished it all of the brick it has used in the various factories it has erected up to this time. This one outlet alone has taken care of about a million and a half of the Buffalo Sandstone Company's product.

At present deliveries are being made for ten or fifteen buildings in Buffalo taking from 50,000 to 200,000 brick for the different jobs and experience has shown, that it is better advertising to distribute the bricks on several comparatively small jobs, than one or two large buildings.

Contracts have been given the Buffalo concern for the brick to erect a large furniture factory and a church, where the owners have insisted upon having sand lime brick and nothing else. Lackawanna, Erie Co., New York, has just completed its new City Building and all common brick in this building were sand lime.

The outlook in Buffalo is exceptionally good and the Buffalo Stone Company states that it finds that once an owner uses sand lime brick he invariably uses the same material on subsequent operations.

The Rust
Clay Feeder

You have divorced yourself from hand methods in making brick—why not obtain a separation from hand methods in handling your clay in the pug mill?

Saves $500 a Year in Labor Bills

The Rust Clay Feeder does away with hand labor and one machine will cut your labor bill just $500 every year it is employed.

It increases your capacity—it improves quality and in every way does better work and more work than human hands can do.

Shall we send you absolute proof of these statements? We have them.

Marion Machine, Foundry & Supply Co.
Box 395 - - - - - MARION, IND.

⅝ Yard Revolving Shovel in Clay Pit, Woodland, Ill.

THE LABOR QUESTION

is a very serious one with you, if your men go on strike—if they are continually laying off; if they leave you at the most critical moment. The key to the situation seems to be the use of labor-saving devices.

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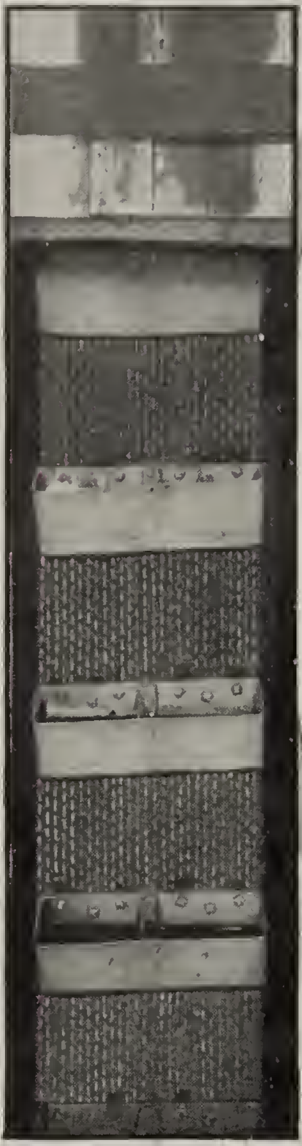

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Trade Review

New York.

New York has been largely to blame for the six per cent drop in the total value of new building plans filed during the first six months of this year. That it has been no more than this is due to the fact that the Lake ports have had an exceptionally active season. But this does not tell all; the slump in actual building construction has been 33 1-3 per cent for the entire country.

When mortgage money is tight, actual building work is tied up regardless of the number of building plans filed. Hence the wonderment expressed by brick manufacturers in New York, for instance, when the volume of building plans fell off 31 per cent and the brick manufacturers felt a slump of fully 60 per cent in demand for their commodity, and are now confronted with the alternative of either shutting down their moulding departments for the season or piling their brick out in the open (as some are doing) in the hope that conditions will change for the better.

Steel reported a falling off in orders amounting to 26 per cent although the leading credit agencies show only an actual decrease of 2.8 per cent from the first half of 1912 and of 6 per cent from the first half of 1909, taking reports from 120 cities. Lumber interests report a slump in nation-wide demand running up to 19.7 per cent, Portland cement reports a drop of 13 per cent and clay products (building material) show a general slump in demand of 11.2 per cent for the whole country.

The answer to this seeming variance in figures is found in the condition of the mortgage market. Builders go ahead and file their plans in anticipation of getting their building loans. These are engaged sometimes as long as a year ahead, often only tentatively. Speculative builders take chances and get their plans filed and approved before they actually have the money in hand. In the event of any unsettlement of the money market these plans are "deferred" and Rudolph P. Miller, superintendent of the Building Department of New York is authority for the statement that when a prolonged slump occurs in the securities market there invariably follows a decided difference between the total number of plans filed for the year and the number of permits granted.

The greatest slump, both in the volume of building plans filed and in construction, was in New York during the first six months of the year. The total amount of building expenditure called for by new building plans filed was only $84,036,496 as against $123,210,430 in the same period in 1912, a decrease of 31 per cent from 1912 and of 43 per cent from 1909, the last high-water mark for building plans filed for that city.

Of the total reported for the six months just closed only $25,000,000 represented actual building construction. The remainder was "deferred."

In the same period last year, of the $123,210,430 called for in plans filed, no more than $100,000,000 was actually going into building work by the first day of July.

The country's building expenditure as called for by plans filed in 120 cities reported by Bradstreets during the first half of this year (New York excluded) was larger than in any preceding six months in its history. Examination of the details by cities, however, shows that fifty-five or a trifle less than half of the cities reporting, showed decreases from a years ago, while, as compared with the first half of 1909, that forty-eight cities, or 40 per cent show reduced totals.

Reports received from building material manufacturers from cities in thirty-nine of the forty-eight states show that the volume of business they have taken has dropped back considerably (more than a third) from what they were taking this time last year.

But banking interests think the end of this financial stringency, the real cause for this big slump, is at hand, providing there is no armed intervention in Mexico and we can keep out of trouble with other nations. One of the largest building money lenders in New York said:

"Give us the tariff, give us peace, not only peace in America, but peace abroad as well, and you will not have to give us prosperity—it will come of its own accord. I've got $58,000,000 in mortgage loans represented right here in this cabinet. Last year I had almost $150,000,000. It is not because I have not been asked for accommodation, but the money was absolutely not forthcoming from the banks. They didn't have it. But they've got it now, and since the Government is going to advance money for moving the crops, things will begin to change."

The comptroller of the largest institutional lending company in the East said:

"The situation looks brighter. We are making engagements with less reserve, but we are still conservative. Unless some unforeseen national emergency arises, the latter part of this year will be its best as far as building is concerned."

This is what is happening; the story was told by an officer of a national hardware association:

"Seven-tenths of what the hardware dealer sells goes into building construction. Hence the hardware dealer should be the first to feel any impetus in building construction. He is coming in with his orders now, timidly, perhaps, but he's nevertheless coming.

"If the little hardware dealer sells seven-tenths of his goods to builders, any increase in inquiry from builders is liable to spur him to the point of replenishing his stocks of shovels, picks, scrapers, plows, sash cord, chain, carpenters' tools, butts, etc., etc., etc.

"Of course, that applies to local suburban conditions where practically all the metal work that goes into a building is purchased from the neighborhood hardware store. But there is a close application of this deduction to the big scale builder, architect and owner everywhere.

"If the little fellow in the country is finding that the banks are letting down the bars to him, it must be because the banks are finding the New York money market easier and not, as the pessimists believe, because the banks cannot place their money in New York. Little country banks are going to hold on to their depositors' funds just as tightly as the big metropolitan banks are holding on to their millions while the market is tight and financial nervousness prevails. When, therefore, the little banks consent to finance small builders, it is because the New York money market is easier and building loans are made more freely. Interest rates for time money are not so high, either.

"But just before this condition actually takes place, the prospective builder, having been advised that his application for financial accommodation will probably be favorably acted upon, other things, of course, being equal, he begins to arrange for the delivery of materials. When a number of builders begin to make inquiries the dealer finds himself low in stock and comes into the market. He, of course, expects long credit and he usually gets it. That makes collections slow in the wholesale market and finally has its effect upon the manufacturer, who, in turn has to begin his next season's output on extended credit which brings him back to the bank and the money market. If the money market has regained something like permanent strength between the time the little builder first made application for accommodation and the manufacturer makes application on notes to tide him over a non-collection period, he keeps his force busy and goes on supplying the market's need. If the market has weakened, he must either force collections with the risk of possibly losing a customer, or let some of his help go and thus break up an organization which may have taken him years to perfect.

"The same cycle, only on a larger scale, occurs when the big builder gets his building loan.

"The dealer who first feels the growing inquiry is he whose line is closest to steel because in big building construction work, steel is the basic building element and it foretells future construction work because it has to be specified even before excavation begins."

There is good reason for considering the words of the optimistic hardware man quoted. If the small hardware dealer feels an increased inquiry, it is a good sign that small building construction is again underway and if small building work can be financed, it is a sign that conditions are ripe for a change for the better.

The Pacific Coast.

For the last month, the difficulty of procuring loans for building purposes has interfered with operations to a noticeable extent, and the records in most Pacific Coast cities are lower than the previous month, or the same month of last year. In Los Angeles, July was slightly ahead of June, with a total of over $3,000,000, but lower than a year ago, while San Francisco shows a drop from last year of over $1,000,000. Some of the smaller towns are keeping up fairly well, and

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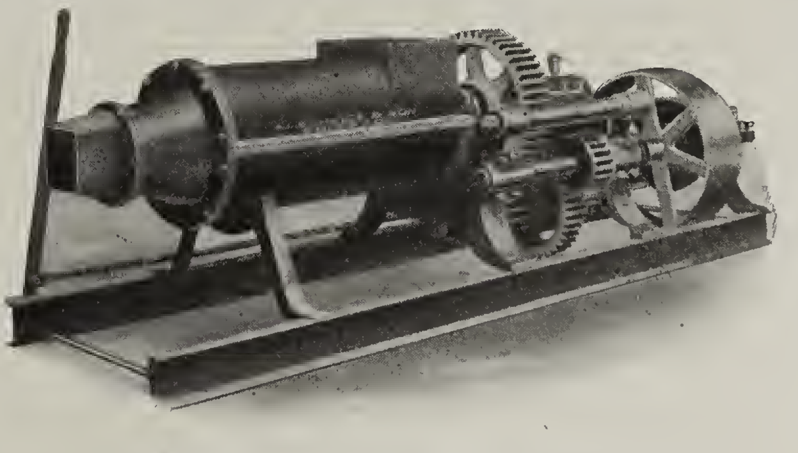

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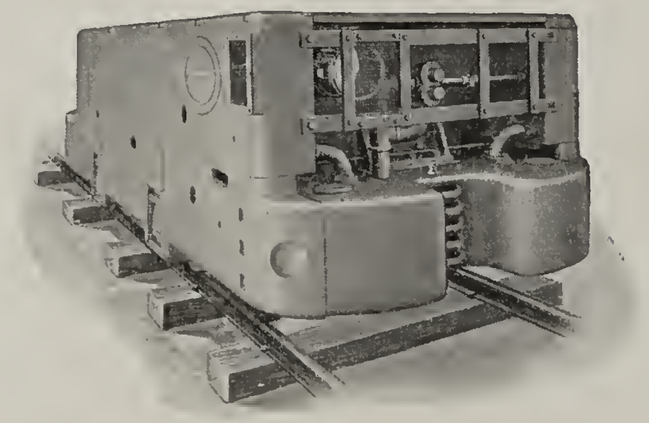

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the financial situation seems to be getting a little better, but many builders are still unable to go ahead with contemplated improvements.

The Vallejo (Cal.) Brick & Tile Company, which has done little with paving brick for some time, is renewing its experiments, with the most satisfactory results so far recorded. The rattler test on the last lot is down to about 11 per cent, with an 18,000 lb. compression test. If this standard can be maintained, the company hopes to get considerable business in this line, as the city of San Francisco is more favorably disposed to brick pavement than ever before.

Brick has for some time been used for paving the gutters of Los Angeles streets, but efforts are now being made to substitute other materials, except at the crossings.

The West Side Brick Company, of Maricopa, Cal., is getting a good volume of business for new buildings in the oil field. The last large job booked is the Odd Fellows' building at Taft, Cal., which will take 200,000 brick.

The Pratt Building Material Company, San Francisco agent for the Sacramento Clay Products Company, has taken an order for 100,000 red pressed brick for the new Clark residence at Piedmont, Cal.

N. Clark & Sons have taken a contract for the architectural terra-cotta for a 6-story building at Sutter and Jones streets, and report several other large orders for terra-cotta and pressed brick for 6 to 8-story apartment houses in this city. One of their largest contracts of late is for the new manual training school in Oakland.

The use of clay roof tile is making considerable headway in California, this material having been placed on a great many public buildings, residences, and even factory structures during the last year. The increased demand is partly due to the popularity of "Mission" architecture, though tile is being used on quite a number of buildings designed in other styles, and partly to the growing desire for a fire-proof roofing of pleasing appearance. The United Materials Company of San Francisco has had a steady run of small orders for Mission and Spanish roof tile, of which the southern California plant of the Los Angeles Pressed Brick Company makes a specialty.

Kentucky.

The "Made-in-Louisville" Association has been formed for the purpose of putting on an exposition of Louisville products the week of August 25. The idea was unusual, in that the place of exposition is to be the windows of the down-town stores, practically all of the leading houses on the principal thoroughfares having agreed to give the use of their windows for this purpose. The brick men, realizing the value of publicity of this kind, and the desirability of impressing local consumers with the quality and variety of Louisville clay products, are taking hold of the exposition vigorously. The P. Bannon Sewer Pipe Company, the Kentucky Vitrified Brick Company and the Louisville Brick Company are among those which will have exhibits, besides being represented in the industrial parade which will be a feature of the exposition.

The city of Louisville is preparing to make up specifications on $250,000 of street work, in which vitrified brick, as usual, plays a prominent part. Since the city abandoned sand filler and began the use of cement grouting exclusively, the service given by brick streets has been entirely satisfactory, and the memory of the old streets, which were cut in a few years, is beginning to grow faint. The streets which will be surfaced with vitrified brick, according to preliminary plans announced by the board of public works, include First, from Breckenridge to Oak. This will be a big job in itself, as the distance noted covers five city blocks and is in one of the leading residence sections of the city.

Sewer pipe manufacturers and dealers are continuing to profit by the work of sewer construction which has been under way for several months. The city got nearly $1,500,000 out of the sale of stock in the gas company, and has been spending the money judiciously in the construction of sewers. Most of the work has consisted of laterals requiring sizes from 48 inches down, so that the pipe men have had things nearly all their own way. They have been successful, too, in repelling the competition of cement tile interests, and vitrified pipe has been used on the greater portion of the work.

Though the aggregate amount of building done in Louisville during the fiscal year which ends August 31 will be about $2,000,000 less than last year, the brick men have not had much to complain of, because many large structures, all taking brick, have gone up. The number of small residences and other buildings, many of which do not use brick to amount to anything, has been greatly reduced, and this accounts for the reduction in the totals.

Brick manufacturers have been interested in learning of the probability of the passage of a workmen's compensation law at the next session of the state legislature, which meets in Frankfort in January. There has been such a demand for legislation of this kind, from so many different sources, that it seems almost a foregone conclusion that a bill of some kind will go through. This being the case, the Kentucky Manufacturers' and Shippers' Association, of which many of the brick men are members, has taken the lead by announcing that it will not oppose a workmen's compensation bill of the right sort, but will urge the passage of a law which is properly drawn and will not be unduly burdensome. While the cost of liability insurance may be increased somewhat by the introduction of such a law, it may be held down by the fact that the cost of litigation is now the chief factor in the liability premium, while under a compensation law litigation should be almost entirely eliminated. Incidentally, it looks as if brick men will have to pay 50 per cent higher rates for liability insurance anyway, as the actuarial bureau of the insurance companies has recommended that all industries in Kentucky be charged an advance of this amount, as the result of excessive losses in this state.

The Indiana Reformatory, at Jeffersonville, across the river from Louisville, is considering spending $18,000 in the installation of equipment for brick manufacture, intending to make all of the material it needs for construction purposes.

The Mineral Fuel Company, which is developing coal mining property in eastern Kentucky, plans to install a brick plant at Fleming, an industrial town which it recently began to construct.

F. M. Kennedy, Lafayette, Ind., and E. S. Quigley, of Illinois, have been put in charge of the business of the Smithland (Ky.) Tile Company. Mr. Kennedy will superintend the plant operations, while Mr. Quigley will have charge of the installation of tile for the company's customers.

The Princeton (Ky.) Brick works had the satisfaction recently of being able to deliver brick from its plant to an important job without the necessity of lengthy transportation. It is furnishing the material for the new power plant of the Princeton Electric Light & Power Company, which is located immediately adjoining the brick yard.

Ira A. Chase and others are organizing a company at Moscow, Tenn., for the purpose of establishing a company to manufacture brick, terra cotta and tile.

The Louisville (Ky.) Pottery Company, manufacturing flower pots, jugs and other stoneware specialties, has planned to increase its capacity by erecting additional kilns and installing machinery in the clay shops. This pottery is the only one of its kind in the Louisville district.

Pittsburgh, Pa.

The Martin Brick Company, of Pittsburgh, secured a nice piece of business, when it secured the order for the face and interior brick to be used in the new school building at Williamsport, Pa. The brick are to be shipped from the Kittanning plant. The light colored brick for the exterior walls was sold at the rate of $14 per M while the brick to be used for the interior were sold at the rate of $23 per M.

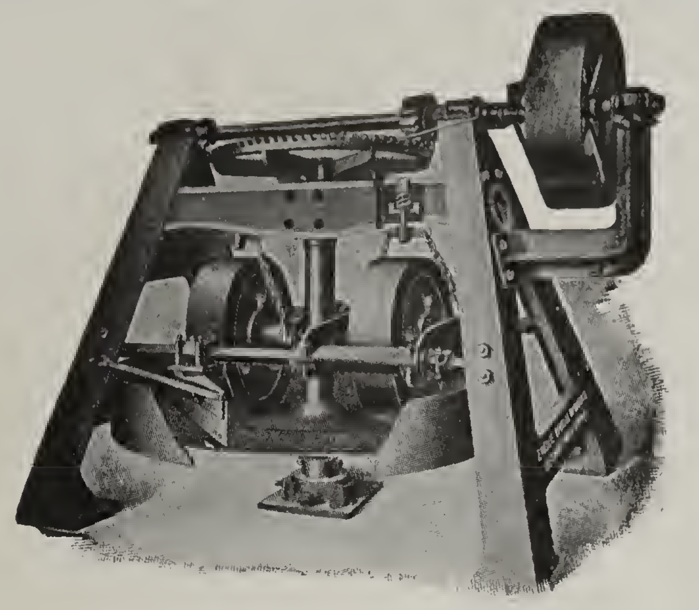
The Rush Creek Clay Co. has been formed at Junction City, O., by John E. Landrum and his four brothers. The company has a capital stock of $25,000.

The order for the millions of common brick that will be used in the construction of the new Kaufmann-Baer Department stores of Pittsburgh was secured by the Entress Brick Co., of Pittsburgh. The order is the largest of the character that has been awarded in the Pittsburgh district in several years.

There is considerable activity in the construction of new brick plants in the vicinity of Canal Dover, O. The Harbison-Walker Refractories Company, of Pittsburgh, Pa., is erecting a new plant there while the Dover Fire Brick Company, of Canal Dover, is building a new plant at Strasburg, near Canal Dover.

On account of the large stock of brick that was on hand at the time fire caused a lot of damage to the plant of the Thornton Fire Brick Company, at Grafton, W. Va., the task of taking an inventory was a tedious one. A complete report will soon be in the hands of the stockholders. The company has decided to rebuild, and this will be undertaken as soon

The "Eagle" Dry Pan



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Chase Improved Flexible Bearing Folding Deck Dryer Car
See this car before placing your order.
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DON'T USE GRATES—THEY WASTE YOUR FUEL

Saved 20 Per Cent in Its Kilns

The Argillo Works of Rock Island, Ill., figured that 40 per cent of the cost of its plant operation was charged to fuel cost and sought to reduce this item. Secretary Titterington took our advice—

He Installed the Grateless Gravity Feed Fire Box

He discovered, after a faithful test and comparison, he had been wasting enough fuel in his kilns to give him a real profit, as he reduced burning time, he got a uniform burn, he saved 30 to 40 per cent in labor, and he saved 16 to 20 per cent in fuel.

Read His Letter:

Rock Island, Ill., June 14, 1913.

Grateless Furnace Co., Des Moines, Iowa.

Gentlemen: We wish to say in reference to the grateless furnace furnished by you to us at Carbon Cliff, Ill., last winter, that we have by experience found the following benefits:

First:—We use from 16 to 20 per cent less fuel than formerly.

Second:—We have reduced the time of burning materially.

Third:—We have had more even burn from top to bottom of the ware in the kiln.

Fourth:—We formerly used grateless boxes with two openings.

Fifth:—Saving amount of labor from thirty to forty per cent, making it possible to handle a larger number of kilns with the same number of firemen.

Sixth:—They are so constructed that the heat can be held evenly on all sides of the kilns in extreme windy weather.

We can fully recommend them as being a desirable fire box to install.

Yours very truly,
ARGILLO WORKS,
(Signed) F. Titterington, Sec.

GRATELESS FURNACE CO.

A full description of the Grateless Gravity Feed Fire Box appeared in the July 15 issue of "Brick and Clay Record," on page 178. We will also send a pamphlet on request.

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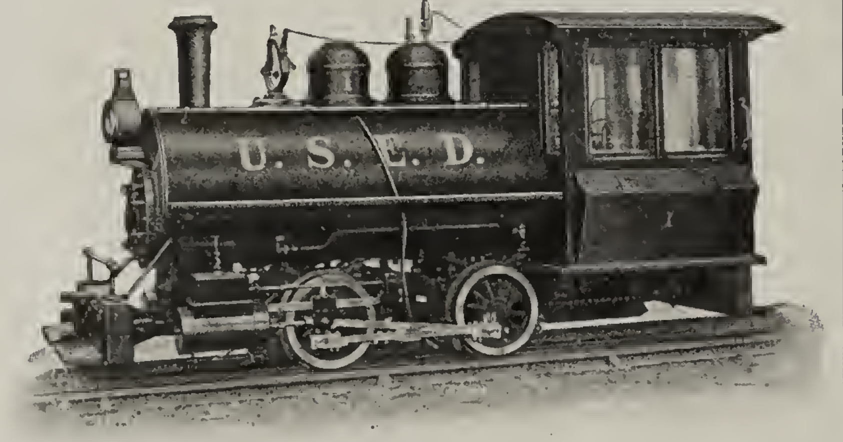

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New York City: 362—50 Church St.
Vancouver: 175 Cordova St.

as possible. It is currently reported that the loss to the company will exceed the amount of insurance carried on the property.

The McFeely Brick Co., of Latrobe, Pa., with general offices in Pittsburgh, Pa., has brought the plant of the Lincoln Brick Co., located just east of Bolivar, Pa. It is to be placed in operation as soon as repairs will permit. The plant has been in the hands of a receiver.

J. H. Bennett, of 434 Fourth avenue, Pittsburgh, Pa., has taken over the works of the Mars Brick and Tile Co., located on the Baltimore & Ohio railroad, at Mars, Pa. The plant has a daily production of 25,000 builders and this output is to be immediately increased. Additional machinery is to be installed, consisting of re-presses, and conveyors, all of which will about double the capacity of the property. The plant is under the general management of W. F. Anderson, who is located permanently at Mars, Pa.

Paxinoz, Pa., a small village of 200 people, or thereabouts, and owned by J. Warren Mifflin, a brick manufacturer, is to be sold "under the hammer." E. M. Leader, of Shamokin, Pa., was appointed assignee by the Northumberland county court. It is said that there are only two properties in the town not owned by Mr. Mifflin. Bankruptcy, the result of unsuccessful contracts, is alleged to be the cause for the sale. An effort is to be made to sell the town as a whole.

Columbus, Ohio.

At a conference held Aug. 11, between Governor Cox, state highway commissioner James R. Marker and deputy commissioners Clifford, Shoemaker and Chamberlian, and chief clerk Tilton, it was decided that the Old National Road, from Columbus, to the eastern border of Ohio, *would be paved with brick*. Money to carry on the work has been appropriated by the Federal government and by the road authorities in the counties through which the road passes. According to the present plans, contracts for this paving will be awarded early in October.

Manufacturers of paving brick as well as many plants producing face building brick are having trouble in securing labor to operate their machinery and handle the output during its various processes and after it is ready for shipment. This is especially true of factories located in the coal mining belt of the Buckeye state, and is due to the fact that recent labor legislation favorable to miners has made labor in the mines much more attractive, from a pecuniary standpoint, than working in other industries that have not, so far, been the subject of so much agitation. Coal miners do not suffer from either cold or heat, the temperature of the workings being practically uniform throughout the year and while the work in the brickyards is not attended by as many casualties, it is not attractive, either from the standpoint of the pay envelope or the conditions of labor. The heat of the kiln fires, added to the fact that much of the work is out of doors, in the broiling sun, makes it a difficult problem for brick manufacturers to keep full gangs at work when the thermometer shows signs of registering in three figures. Manufacturers of paving brick are having the hardest time that can be recalled. It is all right in the clay mines, for there conditions are approximately as favorable to the men as they are in coal mines, but it is very different, out in the open. The men find they can make more money, with less exposure and with less work underground, than they can in the light of day, and are deserting an industry that has, up to this time, been one of the largest employers of semi-skilled labor in the Middle West.

A special meeting of the stockholders of the Alliance Clay Products Company, at Alliance, Ohio, has been called for August 26, to consider the question of increasing the authorized capital of the company from $50,000 to $200,000. The company paid a very large dividend last year, after making a number of costly improvements.

Bids are being received at Irondale, Ohio, by the Banfield Brick Company, for a plant to have a capacity of 100,000 brick daily, and a battery of fourteen kilns. The cost of the new plant is estimated at $100,000 and is planned to make common brick, sewer pipe and other clay products.

Owing to the activity of building improvement in the Lake ports, which are served mainly by Ohio brick plants, the demand for face brick is strong in the vicinity of Columbus. Some trouble has been encountered through a shortage in the supply of box cars, but this has not been sufficiently general to make an appreciable difference in the shipment.

Paving brick manufacturers and road commissioners from all parts of the state are making preparations to attend the coming convention of the National Paving Brick Manufacturers' Association, which will be held at Cleveland, Ohio, September 17 and 18 prox. The convention will include many side trips to brickmaking plants and include a tour of inspection of brick paved roads in various parts of the state. It is also reported that one of the large buildings on the grounds of the Ohio State Fair will be given over to road building machinery and materials, and one of the exhibits that will be given prominence is the new type of rattler, proposed by the committee that recently reported to the American Society for Testing Materials, at its meeting, held in July, at Atlantic City, N. J.

Maryland.

Brick men in Maryland, and Delaware too, are facing a serious problem in the labor question. In Baltimore, particularly, is this true. This city is spending millions of dollars in public improvements, and the contractors have to rush things in order to be finished at the stipulated time. Therefore, they are willing to pay high prices for labor, and are not over-scrupulous in the manner in which they secure help. Hundreds of employes on their way to work in the brick yards and plants have been held up, and offered double what they were making, and in consequence it is hard for the brick men to secure labor.

The business in this state, and its sister, Delaware, is sound and safe. A feeling of confidence has succeeded the nervousness manifest because of political conditions some time ago. Business men seem to feel that the administration will solve all its problems soundly. But they still show a tendency to wait.

Deliveries have not been as large as they might be; not so large as for this time last year, in fact, but the dealers are gradually catching up. There was a marked increase in manufacture over the corresponding period for last year, and the sales, too, took a decided jump.

Building operations are extending very satisfactorily. New houses are being planned every day, and all Baltimore houses are built of brick. As fall approaches, these building operations are expected to show no dimunition, as the small suburban properties are a feature of Baltimore real estate now.

In Delaware there is practically a parallel condition, although the cause of the shortage of labor there is somewhat different from the case in Baltimore. All through Delaware the Pennsylvania Railroad is making large improvements, tearing up tracks and all that sort of thing. Labor is needed to do this, and as in Baltimore, the brick men are the ones who are suffering.

Alabama.

Owing to the unusual amount of building that is being done in Birmingham, the demand for both face and common brick is steadily increasing. Between four and five million dollars worth of steel frame construction is being erected in this city alone, five large steel skeleton buildings being under way. These will all use large quantities of brick and terra-cotta and as the construction will be carried on well into the winter, the prospect for a busy fall is very good. Local plants are getting the bulk of the common brick business and large quantities of face brick are being shipped in from Ohio and Pennsylvania plants, as well as from the local brick manufacturing establishments.

The Southern Club is adding another story to its handsome brick building and various industrial enterprises are building new buildings or adding to the old ones, at various points in the state.

A recent trip through the clayworking districts of Alabama showed that in many of the smaller towns in the state, brick buildings are rapidly taking the place of the frame structures that formerly comprised the "best sections" of these southern municipalities. In many of these smaller cities, local brick plants are taking care of the demand, and are enjoying an increasingly wide radius of shipments on orders that come practically unsolicited, the "back to brick" movement being strong, even in spots where there is no local manufacturer to stimulate the interest in the "best of all building materials." At Oneonta, the need of a brick plant has been so pressing that local capital has taken advantage of the shortage and started a new plant with a capacity great enough to assure Oneonta builders a good supply and to leave some to be shipped out into other parts of the county.

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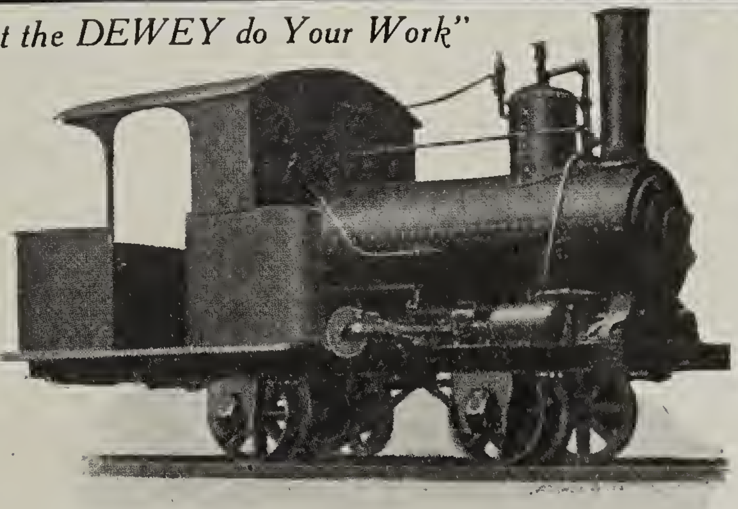

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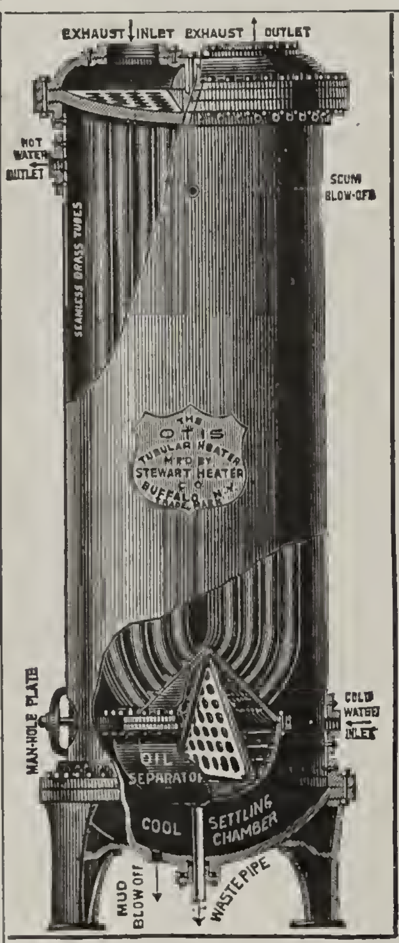

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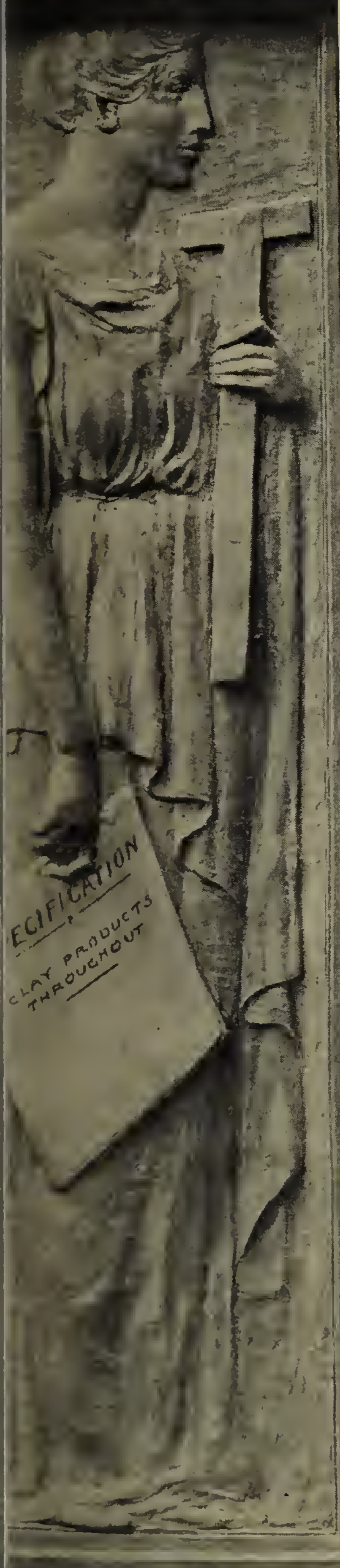
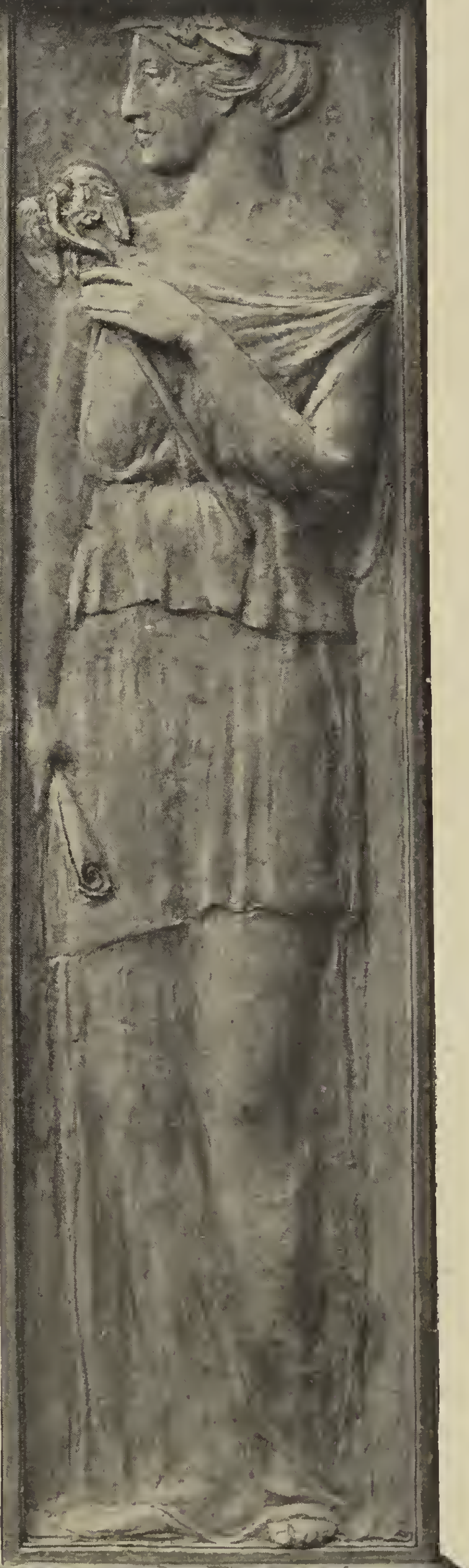


H. D. SAVAGE

President Refractories Manufacturers' Assn.



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BRICK and CLAY RECORD

Volume XLIII CHICAGO, SEPTEMBER 1, 1913 Number 5

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The Editor's Corner

A Department Wherein is Set Apart Comment
and Opinions on Some of the Graver Problems
Confronting the Clayworker and Co-Laborers

SO MUCH has been said in these columns the past year about the Get-together Spirit—so PERSISTENT has been the campaign of education—so FIRM our conviction in what we PREACHED some of our friends smilingly have said we are obsessed with a single idea.

This journal pleads guilty to the charge. It IS a single-idea magazine. It has just ONE policy, and that policy is to promote the industrial welfare of the clayworkers of the Nation.

And, because it believes that co-operation is one of the essentials to prosperity, "Brick and Clay Record" has been ceaseless in its efforts to interest the clayworkers in co-operation.

Because it believes that unity of purpose—unity of action, unity of thought, are necessary for placing the manufacturers of burned clay products in their proper position in the industrial activity of the country, this journal has been untiring in its labors to arouse its readers to positive, initiative work.

Nothing has been accomplished WITHOUT persistency.

Nothing CAN be accomplished without a continuous, well-defined effort.

For this reason this journal has been PERSISTENT.

It must be admitted, however, that the first few months of this educational work were filled with keen disappointment.

It must be confessed our labors met with little response at the start.

Clayworkers, convinced in themselves of the superiority of their wares, had fallen into a dangerous position, and, burdened with an OVER-DOSE of Self-confidence, refused to be interested.

Gradually, however, even tiny drops of water will wear away the hardest of granite, if they are permitted to drop LONG enough and OFTEN enough.

And so it is with this journal. Feeble though our efforts may have been, the clayworkers slowly have awakened to the situation.

Manufacturers of burned clay KNOW now the value of co-operation, and they are beginning to PRACTICE co-operation.

The great national organizations, formed for the promotion of the interests of the various branches of the industry, are being supported more liberally.

The state organizations have been aroused to the necessity for action.

New national and state bodies have been formed by other branches of the industry.

Manufacturers in many cities have formed local associations.

Manufacturers, as individuals, realizing the value of co-operative effort in an industry, as a whole, have encouraged the use of the same principles in their plants and among their employes.

This summary is not an idle statement, made for the purpose of self-gratification.

The great national bodies of clayworkers HAVE shown a great activity.

The recent organization of the American Face Brick Association—the recent organization of the Face Brick Dealers' Association—the recent organization of the Eastern Paving Brick Manufacturers' Association—the recent organization or re-organization of several state associations and the formulative work just now of the sewer pipe interests and other branches of the industry, PROVE that interest IS being shown in co-operative work.

The organization of hundreds of local associations in both small cities and large cities PROVES that an awakened interest is being manifested in a UNITED effort to accomplish SOMETHING.

And all this activity is indicative of a quickened industry. It augers well for those who have pinned their FAITH and invested their DOLLARS in the future of burned clay.

But we must not again make the mistakes of the past. We must avoid the inviting Path of Least Resistance and follow the narrow trail of Perseverance, Persistency and Prosperity.

It is so easy to become OVER-CONFIDENT.

It is so easy to be CONTENT with accomplishing a LITTLE and resting on the achievement of that MITE.

Stick to the work you have mapped out. Clayworkers of the Nation, teach your own plant employes co-operative effort. Encourage them to follow a well-defined plan in everything they do.

Join hands with your fellow clayworkers in the community in which you dig the Dollars of Success. Form local associations. Adopt the Open Price Policy. Inaugurate publicity campaigns to create a local demand. Present a united front for proper legislation, for better freight rates and for a systematic selling and delivery system.

Join hands with your fellow clayworkers in the commonwealth in which you live and encourage the work of the State organization.

Take membership in the national association that represents the branch of the industry you are interested in.

Costs money? Of course. So does fuel. So does machinery. In fact, it necessitates an investment to run any part of your business.

Co-operative effort with your fellow clayworkers is just as essential to YOUR prosperity as any other single step in your business. It is a PART of your business and as such must be RECKONED with.

Do not be short-sighted. Do not be a mossback. Keep abreast with the Spirit of the Times.

Trying to run a business TODAY as you did forty years ago keeps you in the ONE-HORSE class. You have more ambition than that.

◆

IT IS SAID there are more failures among the manufacturers of burned clay products than in any other industry. This may or may not be true—there are no statistics convenient to prove or disprove the statement. That there are more than there SHOULD be, however, is not to be questioned.

A reader, recently writing to the editor of this journal, calls attention to the oft-repeated charge and wants to know WHY the industry is responsible for more failures than other fields of investment.

To properly answer this question would require more space than the limitations of this department afford.

Briefly, one might say that it is chiefly because those who fail do so because they enter into the business poorly equipped.

Usually, when a man or set of men determine to build a factory for the manufacture of automobiles, he or they are BUSINESS men who see the possibilities of turning their Idle dollars into Profit-Earning dollars. This, also, is true of the men that engage in the manufacture of any other utility.

With the clayworker it is different.

Too many men lacking in business acumen—too many devoid of even the qualifications to run a cross-road store successfully, get the idea into their heads that the manufacture of clay products is kindergarten work and leap blindly into the game.

There is only one ultimate result—failure.

Failure, too, with the same man would result in his attempt to manufacture corsets, in the making of wagons, of furniture.

There are those who say that lack of success in the manufacture of burned clay ware is attributed to a lack of knowledge of the actual methods and processes.

Clay manufacturing is decidedly technical, they say. You must have knowledge of clay, of the manner in which to prepare clay and its treatment. You must understand how to dry it, how to burn it and, in fact, spend years in the school of experience before you can HOPE to produce a profitable product.

If you are to be a superintendent of a clay plant and your ambition is to master the manufacturing end from the standpoint of an EMPLOYE, the stand is well taken.

If you are looking at the matter as a BUSINESS man who expects to INVEST his money with the idea of MAKING MORE, the viewpoint is wrong.

If Hugh Chalmers, who was the general manager of the National Cash Register Company, at a salary of $72,000 a year, had followed this principle, he would not have given up this princely salary and entered into the automobile business, for he did not know a magneto from a clutch, least of all HOW to MAKE them.

But Hugh Chalmers DID give up his $72,000 a year to enter into the manufacture of automobiles, and he not only made a SUC-

CESS of the business but he soon became a POWER in the field.

Was this possible because he knew HOW to make automobiles, or was it because he understood how to organize, how to sell and how to run a business in which the details of manufacture were left to subordinates who received a salary or wage for the benefit of the knowledge or experience they possessed?

Many clay plants are started through ACCIDENT.

Some one has a tract of land too poor to raise an umbrella on. Some one else suggests, inasmuch as it is worthless for farming, he might start a brick or pottery plant, or make some other burned clay product.

Our friend, probably as poorly equipped to run a successful burned clay manufacturing business as he would be to run a match factory or a merchant tailoring establishment, invests his savings and—fails.

Unquestionably Hugh Chalmers could have invested his money and his brains in a clay plant and succeeded just as well as he did in the automobile business.

Any man who understands how to organize a band of employes into a working, profitable unit, who has enough judgment to buy intelligently, who knows how to sell to an advantage—any man with these qualifications, whether he knows how to select clay, or prepare it, or dry it, or burn it, can make just as much success in the clay product industry as in any other industry.

* * *

PROBABLY one of the most profitable sessions that the National Paving Brick Manufacturers' Association has ever had, will be held this month in Cleveland, Ohio. This organization for years has held its annual meetings in the Winter months, and the departure from the precedent is expected to draw not only a larger attendance of members but also awaken an unusual interest among engineers and contractors.

An "Open season" session will have much to do with this, because it will afford the opportunity for inspection of actual work while under construction and to thus provide the further opportunity of giving practical suggestions in road building to visiting engineers.

The choice of Cleveland as the first meeting place under this new arrangement also is a happy one and will do much to make the session profitable. Cleveland and Cuyahoga county, in which the "sixth city" is located, have many miles of paved streets, built in accordance with N. P. B. M. A. specifications. They also have a large amount of highways and streets under construction.

Secretary Blair has promised an unusually interesting program, something about which appears in another page of this journal. There will be many radical departures from the usual convention bill of fare, and those who attend will find it a profitable investment.

The National Paving Brick Manufacturers' Association is one of the few real live organizations in the clay product field.

It has done more to advance the cause of brick paving than any other single agency.

Its field has been broad, its labors ceaseless and its policy unselfish.

Because of the work the N. P. B. M. A. has done it would seem that every paving brick manufacturer in the country would be enrolled as a member. The majority are. These joined hands with their fellow manufacturers because they felt it would be a profitable thing to do. They continue as members because their expectations have been realized.

But whether you be a member or not, it is to your advantage to attend the annual meeting of the association this month. Non-members will receive a Profit on the investment of the trip through the information they will receive. They will benefit by rubbing elbows with some of the most prominent engineers of the country and coming in contact with some of the largest paving contractors.

Members will receive the same benefits and even more.

The meeting, coming as it does a few days before the Annual Road Congress at Detroit, Mich., which meets Sept. 29, has a significance that must not be overlooked.

The Congress will draw thousands of good roads advocates from all sections of the country. Municipal engineers and other officials will attend the Detroit meeting. Secretary Blair of the N. P. B. M. A. gives the assurance that many of these also will be in attendance at the Cleveland convention.

Can a better opportunity to make converts to the real, permanent road be given than this? Will you share in this educational work?

Kentucky Colonel Heads Refractories Association

Being a Story About One of the Best Fellows Who Ever Made or Sold a Fire Brick

---

Harlow Dow Savage

Treasurer and Salesmanager of the Ashland (Ky.) Fire Brick Company

IT HAS been said that this Year of Our Lord, Nineteen Hundred and Thirteen, has witnessed the greatest awakening in organization work that was ever known among clay products manufacturers. One of the movements that has helped to make it remarkable is the successful launching of the Refractories Manufacturers' Association, of which Harlow Dow Savage is the first president.

Born into fire brick, his father being the organizer of the Ashland Fire Brick Company, he had a knowledge of refractories at an age that usually marks knowledge of the other "three R's" only—readin', 'ritin' and 'rithmetic. He also inherited a judicial poise and a faculty for leading men, his father having been a prominent figure on the Kentucky bench and a power in the Blue Grass state.

Harlow Dow Savage was born in 1880. He was educated in the public schools in and around Ashland, and at the Kenyon Military Academy. In 1897 he began work in the Ashland Fire Brick Company and has remained with that organization, being its treasurer and sales manager. He is also president of the Clinton Mining Company and of the German Mining Company.

In politics he is a Democrat, candidate for Mayor of Ashland and attached to the staff of the Governor of Kentucky as military aide, with the rank of Colonel.

He is married, has three fine children, is treasurer of the Episcopal Church, is Past Eminent Commander of the Ashland Commandery, Knights Templar, belongs to several clubs and enjoys life as he finds it.

He says, and there is every reason to believe the saying, that he takes more pride in the fact that he helped to form the Refractories Manufacturers' Association, and that it has every indication of success, than in any other thing that marks his career, excepting, perhaps, his parentage and parenthood.

And it is a just cause for pride, not only to the members and officers of the association, but to every user of refractories, that out of the seeming impossible, sprung this strong possibility of eventual standardization of size, shape and quality, this mutual desire for improvement of the product and equalization of freight rates that would help, in time, to make the uniform price a legal possibility.

Its solidarity is evidenced by the fact that every important manufacturer of refractories in the country holds membership and has subscribed to its objects, the first and foremost of which are to promote closer relations between those who make and those who use, that waste may be eliminated and misunderstandings made mere memories.

In electing Harlow Dow Savage to its presidency, the newly formed Refractories Manufacturers' Association showed the same insight into human nature and human possibilities that is so promising a sign in the other large clayworkers' organizations. Setting aside mere prominence, ignoring the pitfall of electing a "representative" of some large interest, they have chosen men who were willing to work for the good of the organization and who had the ability to make that work effective.

The great good that these fraternal trade organizations are doing and will do, in the years to come, depends upon the continuance of this policy—the election of men who are fitted to lead and who have proven their fitness by past achievements.

And in this class Harlow Dow Savage, Kentucky Colonel, is a shining example.

Elbert Hubbard Says: "Fletcherize Your Trade Paper"

FRA ELBERTUS, THE ROYCROFTER
FROM EAST AURORA, PHILOSOPHIZES
FOR THE BENEFIT OF "BRICK AND
CLAY RECORD" READERS .·. .·. .·.

THIS is the first of a series of essays by this inimitable writer which will appear in subsequent issues of this journal. Fra Elbertus here discourses entertainingly and instructively on the subject of subscribing for, paying for, reading, Fletcherizing and studying your trade paper. When he urges you to "Fletcherize" your trade journal he does not mean for you to take him literally because papers as "meaty" as "Brick and Clay Record" would prove a pretty "heavy" meal. He does mean, however, for you to read carefully every page, so that you will have time to digest the profitable suggestions therein and thus be benefitted.

"KNOWLEDGE is power," said Francis Bacon. No bullet ever shot by mental mauser ever found a truer billet, for now it is pretty generally acknowledged that this aphorism of Bacon's is a prime factor in bringing home the succulent breakfast edible that bears his illustrious name.

So everywhere we have the spectacle of eager men and women searching for the springs of knowledge. Why? Oh, so to get a living, increase your bank balance, and fight off the sniffing wolf at the front door. We are recognizing the supreme importance of the here and the now, seeking for ideas and ideals that will improve our efficiency, poise and power.

In these strenuous days, ists and isms have to bear the scrutiny of reason and the test of common sense and truth. Superficiality gives way to specialty. The smatterer, the literary hobo of commercialism is succeeded by the business man whose knowledge is based on scientific principles, those of intimate knowledge of cause, effect and values.

And, paradoxical though it may appear, it is this very specialization, this narrowing down to defined, indelible issues that gives us a wider outlook and a fuller education. Provincialism retards growth. We need to become universalists and to think and act imperially.

"I can't get San Francisco to answer," said a Chicago telegraph operator on the morning of April 16, 1906. "Well, try again," was the answer, "and then if no reply comes call up New York and tell them to call London, and have London call Yokahoma, and Yokahoma will call San Francisco."

And in half an hour the dread news came.

"Mine and thine," was the yardstick of old-time business relationship—with the thumb covering an inch at the "thine" end! "Ours" is now becoming the standard of dealing, and business men know this as the foundation of all successful business. And so, to seek knowledge anent the goods you sell or the service you offer, is not only profitable monetarily but morally. You become part of the commodities you deal in, they mirror your character and personality.

And no man who realizes this truth will offer inferior goods or wretched service. He gives the best he has to his customers and they couple his name with his commodity. Examples of this are on every hand, and "There's a reason." The perfect knowledge obtained by the merchant, artisan, advertiser or business man impels him to seek the best means and the best wares for his customer. Also, knowledge gives him courage, enthusiasm, hope, animation.

Everything must be "all wool and a yard wide." Also, he must know why it is all wool and a yard wide, and impart that information to the prospective buyer. So knowledge, therefore, is not simply a question of absorption—it grows by giving. And this growth by giving, presumes and proves co-operation. No man can lay claim to education without co-operation. No man can hope for business success unless he gets a grip of that truth.

It is by the perfect understanding of the needs of his customers that the man who "serves" is enabled to cater to them. Call it psychology if you like—it is co-operation. And it is not only necessary that this co-operate understanding be between buyer and seller to build up a successful business; it must exist between buyer and buyer, dealer and dealer, business man and business man.

In the old days business men cut each other's throats. Later they cut prices. Then they cut acquaintance. Now they co-operate. The inane competition, born of selfish rivalry, which has only one object—success through the failure and elimination of a competitor—is now almost non-existent.

The competition that obtains nowadays is that of friendly rivalry, based on trustfulness, which seeks to merit success. It is emulation; a noble effort to obtain the highest excellence and give the highest good by sustained effort and applied intelligence.

The one-price system and the fulfillment of "promises" have contributed largely to this desirable condition and friendly feeling between business men and business houses. All this has been the result of education. The truths of fraternity and the square deal have been assimilated until they have become the life-blood of industrial and commercial activity.

It is to meet the requirements of these new economic conditions, this thirst for special information on specific subjects, that we have offered to us technical and commercial courses by various schools and colleges throughout the United States. And thousands have benefited thereby. But if I were asked what I consider the chief medium of instruction and helpfulness for the business man of today, I should unhesitatingly say his Trade, Technical, or Class Paper.

The very fact of being a subscriber and paying for his specific paper, is an education in itself. It tokens a healthful interest in what others are doing in the same line of business, and is bound to make a man a better dealer and a better citizen. Getting together is the big slogan of today.

Any individual who is alone, whether he realizes it or not, is on the slide to limbus. We succeed only as we move with other people. The man who subscribes to, and reads his trade paper, is en rapport with men and things. He is no atrophied anthropoid or paleolithic anthropophagi, with head growing beneath his shoulders.

He is a glowing coal, a live wire; he is in the line of evolution. The genesis of all correspondence schools and courses was a mining paper, run in a country district. Now that great institution gives instruction to millions of students all over the world.

And the good trade, technical and specialized papers published in America today are fostering and nurturing this knowledge-getting idea. They secure knowledge and give it out. And knowledge is power. Thousands of busy business men and advertisers look to the papers in their field for inspiration and encouragement, and they are not disappointed. Their specialized paper becomes their encyclopedia.

It is a mine from which they quarry the four-square stones upon which to build the fabric of commercial success. Nuggets of wisdom and jewels of thought are added to their stock in trade.

These have been tried in the fire of experience and by the acid test of practicability. Experts and specialists fill the trade paper with contributions of inestimable value to the reader. The well-written columns are filled with advice, information and suggestions. Is it any cause for wonder, therefore, that the subscriber is optimistic, prosperous, respected?

"As iron sharpeneth iron so does man the countenance of his friend." And the trade paper gives to its readers a clearer vision, a broader outlook, a bigger heart. It keeps him from becoming mean, small, petty, pestiferous with bats in his belfry. It enables him to get a better knowledge of his goods and service. It shows him how to handle these goods and render that service to the mutual advantage of himself and his customer.

It teaches him that all men are brethren, that nothing goes but truth. That variety in form, color and expression are all in Nature's scheme. And realizing these things he becomes a better salesman, a better craftsman, a better man. His "techiness" gives place to tolerance and he becomes an interested, enthused business man whose religion is to be good and whose business is his religion.

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History
Paving
Convention

BY FAR the greatest aggregation of paving brick manufacturers that has ever assembled in one city at one time, since the beginning of cities and the use of brick as a paving material, will be held by Cleveland, Ohio,—the "sixth city" of America—on the 17th and 18th of September. With them will be the most important gathering of national, state and city highway engineers that has ever been in attendance at a convention of paving brick makers.

Representatives of Good Roads' Associations; delegates from organizations interested in the development of farm life, men whose names are emblazoned in letters of light wherever civic improvements are under discussion, will give the benefit of their knowledge and experience, and reap the reward that will come through a concentration of thought and action that will have a greater influence on better roads than any previous gathering of men in the world's history.

WILL P. BLAIR
SECRETARY N. P. B. M. A. 1913

THE National Paving Brick Manufacturers' Association, at its tenth annual meeting, which will be held at the Hotel Statler, Cleveland, Ohio, Wednesday, September 17th, and the day following, will bring together the biggest assembly of paving brick manufacturers and paving contractors that has been held since paved roads were among human possibilities. The occasion will be marked by a paving conference that will attract municipal engineers and men interested in paving from practically every state in the country.

At recent meetings of the brick committees of the American Society of Municipal Improvements and the American Society for Testing Materials, it was suggested that if at some time prior to the annual meeting at Wilmington, Del., an itinerary of study and investigation at the paving brick plants could be arranged by the National Paving Brick Manufacturers' Association, it would be both acceptable and desirable.

Committees from these societies will therefore meet at the Hotel Statler, in Cleveland, at 8:00 a. m., Monday, September 15, to spend that day and the Tuesday following in visiting brick plants and will remain in Cleveland as the guests of the N. P. B. M. A. during the 17th and 18th, the days of the annual meeting.

Judging from the acceptances which have been received, more than one hundred and fifty prominent city officials and engineers will be present; nearly a hundred paving contractors have signified their intention of swelling the crowd that will throng the corridors of Cleveland's latest hostelry. Representatives of the most important engineering, trade, automobile and civic publications have arranged to report the meetings and give broadcast publicity to the movements that will be inaugurated at this, the greatest "good roads" boost ever held in America. These, with the paving brickmakers, will doubtless make the total attendance considerably more than four hundred.

The meeting will be exceedingly important in that it will bring together for the first time engineers from the leading cities of the country and almost the entire body of paving brick manufacturers. It will afford the engineers and paving brick men an excellent opportunity to discuss their problems on common ground.

The mornings of the 17th and 18th will be devoted to the business sessions of the association. The reports which will

Making Brick Sept. 17-18

NO MAN who is interested in the development of a National highway system that will make the famous roads of Southern France and Northern Italy fade into insignificance by comparison, can afford to miss this epoch making convention. It is not simply a meeting to advocate the use of paving brick—it has a wider and deeper significance, in that it means the intelligent use of brick, intelligently made and intelligently standardized.

It means that road building is to be taken out of the morass of politics in which it has been engulfed and made an honorable calling, supervised by men who will make the building of the people's highways a life work, to the end that these United States will lead the world in one form of improvement that marks, more particularly than any other, the progress of civilization. Every man who adds, by the influence of his presence, to the enthusiasm and power of this convention, will be doing his part in a great step toward the country's betterment.

CHAS. J. DECKMAN
Pres. N. P. B. M. A. 1913

be read by president Chas. J. Deckman, secretary Will P. Blair, treasurer C. C. Barr and assistant secretary H. H. Macdonald will show that the association has had the most successful year in its history.

Since the last annual meeting of the N. P. B. M. A., held in Chicago in March, many new members have been added, and there has been no backsliding on the part of old members.

Both Cleveland and Cuyahoga county, Ohio, are adding largely to their mileage of brick pavements, and opportunity will be accorded to witness brick pavement construction in every detail from grading to grouting. There will be no formal papers read and no set speeches at the banquet to be held at the Hotel Statler on the evening of September 17, but full opportunity will be given to the visiting engineers to discuss what they have seen.

It was at the last annual meeting that the decision was reached to hold future conventions of the association during a season of the year when brick road construction methods could be viewed in actual progress. Engineers and contractors are writing that they are looking forward with much interest and pleasure to a personal inspection, which, for the first time, they will make of the thousand miles of city streets and country roads of Cleveland and Cuyahoga county, about which they have read and heard.

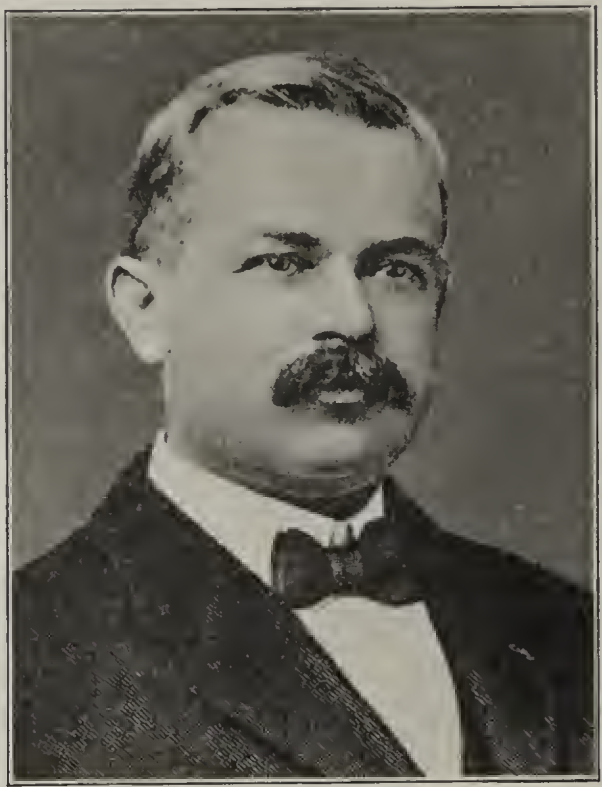
About eighty motor cars have been provided for the trip over the streets and roads. Every paving brick manufacturer who is the fortunate possessor of an automobile, or a stable of automobiles, has promised to drive his car to Cleveland for the big event. The itinerary for the inspection of Cleveland's city streets will include visits to brick pavements laid as long as 19 years ago which have not required the expenditure of one cent for maintenance.

Since no trip, through any city or county, could be made without encountering strips of pavement that were not up to a standard of perfection, the obvious comparisons that will be offered will have a wholesome effect upon the future of city, state and county road work from Maine to California. Instead of listening to theoretical papers, read in conjunction with stereopticon slides that may, or may not be easy to understand, the guests of the N. P. B. M. A. will feel the ruts and see the patches that formerly were known only by picture and word of mouth. "Seeing is believing—feeling is the truth."

Not that there will be no papers read, for there are many

Some of the Engineers Who Will Be Guests of the National

D. R. LYMAN,
City Engineer, Louisville, Ky.



H. W. KLAUSMAN,
City Engineer, Indianapolis, Ind.

HENRY MAETZEL,
Chief Engineer, Columbus, Ohio.

momentous questions to be considered. But instead of listening to what has been done in one city—and who has not heard of Cleveland's achievements in brick pavements?—those who attend this convention will see the work and will know its excellence.

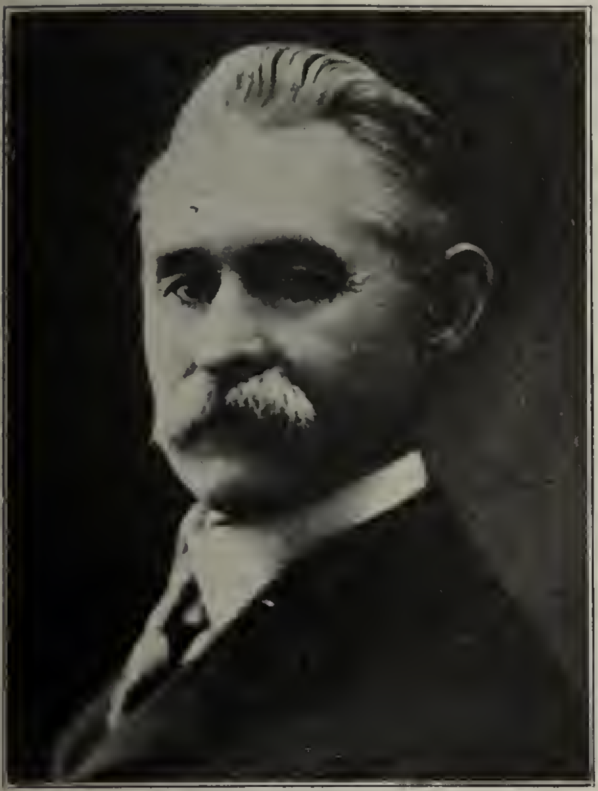
Under the guidance of Robert Hoffman, Cleveland's chief engineer, and Joseph Bayne, paving engineer, attached to Cleveland's government, Frank R. Lander, chief engineer of Cuyahoga county, and his incoming successor, W. T. Stinchomb, and state highway commissioner James R. Marker, the party will visit every street and road in Cleveland that can tell a story or adorn a page in the history of good roads work.

The members of the reception committee will be bedecked with bright colored badges proclaiming that they are there with the glad hand and a hearty desire to make visitors feel that, next to the home town, Cleveland is the best city in this God's country of ours. And there are ample facilities in Cleveland for a man whose heart is full of hospitality and civic pride, to impress upon the visitor that Cleveland is one pretty fine place to come to.

The ladies will not be forgotten, nor left to pine while their busy husbands are being given large quantities of paving information or passing strong resolutions. Theatre parties, motor trips through Cleveland's magnificent park system, lake trips and personally conducted tours through Cleveland's new store district will help the better-halves of paving brick men

The Lattice Room in the Hotel Statler, Cleveland, Ohio, Where Some of the Sessions of the Convention Will be Held.

Paving Brick Manufacturers' Association in Cleveland, Ohio



EDWIN A. FISHER,
City Engineer, Rochester, N. Y.

M. R. SHERRARD,
Chief Engineer, Newark, N. J.

F. J. CELLARIUS,
City Engineer, Dayton, Ohio.

to wile away some pleasurable hours.

Every report received from paving brick districts, since the year 1913 began, has shown a steady, healthy increase in output. Every plant that makes a good paving block and makes it with any degree of economy is behind on its orders. Paving brick makers are busy. Yet, in the height of the season, they are going to leave the "little old plant" behind them for a couple of days, and with "On to Cleveland" as a slogan, are going to add the influence of their presence to the great force that will help to make better roads for the people and better times for paving brick makers. Do not shut your eyes to the fact that those fellows that are going are just as busy as you are. It may be that they arrange their business a little better, and so can get away a little easier than you can—but you don't want to admit that. And just to show yourself how well you have organized your business, and that you can "stay away a couple of days without the whole works going to the bad"—pack your grip and start for Cleveland, not later than the 16th.

And if you are among the few paving brick men who do not hold membership in the N. P. B. M. A., you cannot afford to miss the meeting, for you, above all others, do not know what work this association is doing for you. Once you find out, you will join, and you will find out, if you are within hearing distance of Cleveland, Ohio, on Wednesday, September 17th, or the day following—better both.

The Assembly Hall on the Parlor Floor of the Hotel Statler, Cleveland, Ohio, Where Delegates Will be Received.

Connecting Electric Motors for Direct Drive

BEING A CONSIDERATION OF METHODS IN USE SHOWING APPLICATION OF BELT, GEAR AND PINION CONNECTIONS

By C. B. Mills

IN THE last few years an almost overwhelming amount has been printed on individual motor drive; but the greater amount of this has been on the advantages of individual motor and group motor drive, on the best type of motor under the various conditions or the methods of determining the size of motor required for different tools; but little, comparatively, has been written as to the advantages and disadvantages, and methods of application of the several styles of connections between motor and machine. For that reason this article from the Electric Journal taking up the purely mechanical considerations in the application of electric motors to machinery will be welcome.

CONSIDERED from a mechanical standpoint only, there is little choice in point of reliability between a direct-current motor and an alternating-current induction motor. The direct-current motor armature has the mechanically undesirable commutator and brushes and, usually, a larger proportion of insulating material than the alternating-current motor which, however, labors under the inherent mechanical disadvantages of a very small air-gap or clearance for the rotating element.

The particular method of application selected for any type of motor has more direct bearing on the durability and life of the motor than is commonly supposed. This can be appreciated when it is remembered that the revolving armature of any type of motor is composed of a great number of parts, coils of wire, etc., held together by bands or wedges and depending to a greater or less extent on fibrous or cotton insulating materials of little mechanical strength and, therefore, more susceptible to injury from jars and vibration than other forms of revolving machinery. It is important, therefore, when considering a motor application, to choose a method of connection which will tend to absorb or nullify these effects unless the motor has been designed with a special aim to meeting these conditions, as in railway motors, special mill motors, etc.

Belt Connection.

Wherever conditions will allow, belt drive should be considered, as the belt forms the most flexible connection between motor and load and is the best-known absorbent of mechanical shocks due to load variations. For ideal conditions the belt speed should be from 4,000 to 5,000 feet per minute, and the load per inch width of belt for good oak tanned leather, should not exceed values shown in the curves given in Fig. 1, which illustrate plainly the influence of speed in reducing the allowable effective load on the belt.

In general the load per inch width for single or light double belts should not greatly exceed 40 pounds for belt speeds under 4,000 feet per minute and should not exceed 32 pounds for speeds from 4,000 to 6,000 feet, which is the practical limit of working. The total working pull on belt may be found from the following equation:

$$\text{Pull in pounds} = \frac{\text{hp} \times 33{,}000}{\text{Belt speed in feet per min.}}$$

$$\text{Belt speed in feet per min.} = \text{Pulley dia. in inches} \times 0.262 \times \text{r.p.m.}$$

For certain classes of service where belted motors operate in dusty locations, as in clay crushing plants, cement mills, flour mills, etc., the action of dust accumulations on the belt tends to reduce its pulling power and necessitate an increase in width over that which would be satisfactory for ordinary conditions. Experience has shown that a four-ply treated canvas or rubber belt is approximately equal in transmitting power to a single or light double leather belt of good quality.

The maximum ratio between driving and driven pulleys should be used, as the principal friction tending to destroy tance between centers will depend on the ratio, good proportions being approximately as follows:

Approx. Ratio.	Min. Distance Between Centres.
2 : 1	8 feet.
3 : 1	10 feet.
4 : 1	12 feet.
5 : 1	15 feet.
6 : 1	20 feet.

All belts should have a normal lap on the pulleys of at least 160 degrees unless some form of idler pulley is used to increase belt contact. The use of paper pulleys allows a

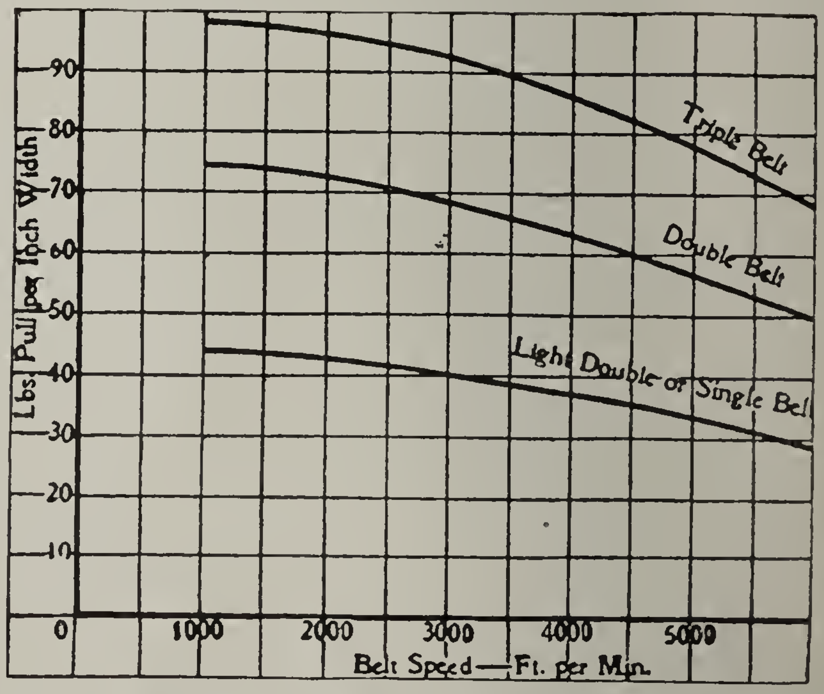


Fig. 1—Curves Showing Permissible Belt Load at Various Speeds.

somewhat smaller degree of lap owing to the better adhesive qualities of this material, and for this reason is to be recommended for all small pulley drives.

It is not usually considered good practice to use heavy double belts of any kind on pulleys smaller than 15 inches diameter, as the abrupt bending of the thick belt over a small pulley son opens the fibres and ruins the material.

Rope Connection.

On a par with belt driving in its effect on the motor can be placed rope drives of either the English or American system, and many installations are at present using this drive for large motors. The English or separate rope system is a favorite in rolling mill or other work where large powers are transmitted and continuity of operation is especially desirable, while the American or single rope system is especially adapted to group drive from a large unit. For either system as large a rope as possible should be chosen, for economical reasons. The transmittig power of different sizes of manila ropes at different speeds may be taken from the curves in Fig. 2.

To insure reasonable life of the ropes, the smallest sheave over which the ropes run should be not less than forty-two times the diameter of the rope used. Lubricated core rope should be used, as the principal friction tending to destroy rope is between the fibers themselves, and, owing to the action of centrifugal force, external lubricant will not penetrate the rope.

Considering the life of the rope alone, experience shows that the most economical speed is 4,500 feet per minute, and this should be used where cost of maintenance is an important factor.

Very small pulleys or sheaves, in general, and on induction motors in particular, should be avoided, as they necessitate heavy belt tension to transmit the power and invariably produce bearing troubles which militate greatly against efficient operation, and on induction motors with their air-gap clearance cause secondary troubles liable to damage the machine seriously.

Toothed Chain Connection.

In many applications where positive connection is desirable, a toothed chain, such as the Renolds type, offers a somewhat flexible and a very satisfactory method of motor connection. When the center distances between driving and driven shafts are too short for belts and too great for the use of gears, the maximum ratio obtainable with chain is approximately 6 : 1. As short a center distance should be used as possible owing to the expense of the chain. For the best operation, the chain speed should not exceed 1,500 feet per minute, as beyond this speed the necessary grease for lubrication is thrown off and the wear becomes excessive. It is also imperative that means be provided for adjusting the sprocket center distances to take up the wear in chain and sprockets and keep same fairly tight. Chains work best when driving horizontally. The driving side should be on the bottom when distance is long and on top when distance is short or speed high. For certain very severe conditions spring center gear sprockets have been used and found very satisfactory in protecting the motor and increasing the life of the chain. Chain drive imposes a more severe strain upon the revolving parts of a motor than a belt drive and this fact must be borne in mind and should be properly discounted in the type and design of motor recommended for a specific application.

Gear and Pinion Connection.

Owing to its economic advantages as to floor space, etc., the trend of new development appears to be in the direction of direct geared applications, and it is where this condition exists that the greatest precautions must be taken to eliminate those undesirable factors which usually result in a rapid depreciation of the motor unless it has been designed with a view to fitting this particular application.

In general it has been found that where standard motors designed for belted service, have been used in general applications, driving roll trains, bending rolls, plunger pumps, glass grinding machinery, cement mill machinery, clay working machinery, coal and ore handling machinery, hoists, cranes, etc., etc., failure has been very frequent where the mechanical limitations of the electric motor were not properly understood and taken into account.

As an engineering proposition, the use of a standard commercial motor of over 20 h. p. with a pinion mounted directly on the motor shaft should be avoided wherever possible. Where service conditions demand a direct-geared connection, an ideal arrangement, and one to be used wherever possible, is to have the pinion carried on a short shaft in separate pedestals or other bearings; this shaft to be coupled to the motor shaft by some form of flexible or cushion coupling. This arrangement at once removes the motor from the destructive vibrations and hammering of the gears, allowing a lighter type of motor to be used, and, while somewhat more expensive than the common method of mounting the pinion directly on the motor shaft, the increase in cost is a cheap premium to pay for the practically absolute continuity of operation assured. It is especially applicable in many lines of industrial work where wear on the bearings of the driven mechanism is an unimportant item and where the motor bearings are liable to be neglected.

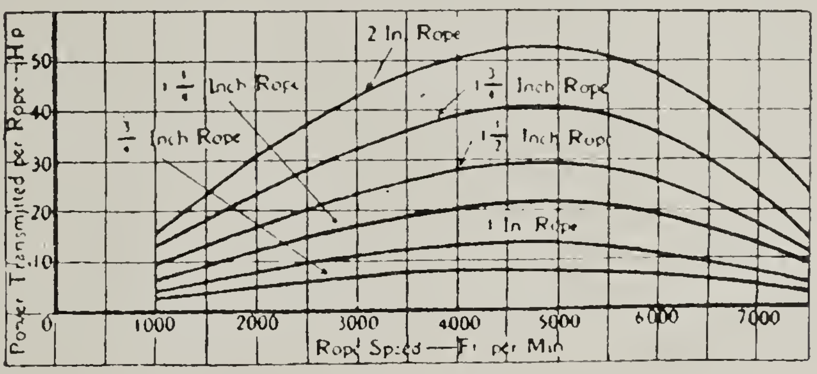


Fig. 2—Curves Showing Transmitting Power of Ropes at Various Speeds.

Where the above arrangement is not permissible and where operating conditions are not too severe, an outboard bearing for the motor shaft beyond the pinion is to be recommended for motors of 20 h. p. and over, as this auxiliary increases by nearly 100 per cent the resistance of the shaft to bending and the ability of the bearings to resist pounding out. As the chief cause of trouble on geared motors can be traced directly to the hammering and vibration due to the tooth impacts, the best practice demands that for commercial motors, where the pinion is mounted directly on the shaft, speeds should not exceed 700 r. p. m. for motors above 20 h. p., and for heavy work even this is too high.

The maximum pitch line speed at which cut metal gears should be run is approximately 2,000 feet per minute, and speeds higher than 1,200 feet are not to be recommended for best results, particularly where the pinion is mounted directly on the motor shaft.

Pitch line speed may be determined from the following equation:

$$\text{P. S. L.}=\text{Rev.} \times \text{Pitch. Dia. in inches} \times 0.262.$$

$$\text{Pitch Diameter in inches}=\frac{\text{Number of Teeth}}{\text{Diametral Pitch}}$$

$$\text{Pitch Diameter in inches}=\frac{\text{No. Teeth}\times\text{Circ'l'r Pitch}}{3.14}$$

As in ordinary motor drives the pinions are usually of forged steel, the strength of the gear only need be considered when figuring the size of gear required. The following table shows a ready means of determining the proper proportions of cast iron gears having more than 25 teeth to transmit a given horse power, also the gear pitches preferable for motor drives.

TABLE 1.—Showing values of horse power per inch width for pitch line speeds above 1,000 feet per minute.*

Hp to be Transmitted	Perferable Diametral Pitch	Hp per in. width per 100 ft. per Min.
1 to 2	8	0.24
2 to 5	6	0.30
5 to 10	5	0.38
10 to 30	4	0.48
30 to 75	3	0.64
75 to 125	2½	0.76
125 to 200	1¾	1.10

For pitch line speeds from 500 to 1,000 feet per minute the above values of horse power should be increased 50 per cent., and for speeds up to 500 feet per minute should be increased 100 per cent.

The minimum pitch diameter of motor pinion is approximately (2 x dia. of shaft) for ordinary cases, and the smallest pinion should not have less than 14 teeth under any condition.

Example.—25 h.p. motor, 600 r.p.m., countershaft speed 100 r.p.m.

Diameter motor shaft at pinion fit=2½ inches.
Smallest pitch diameter possible=2×2½=5 inches.
From table of preferable pitches, pitch=4 inches.
Therefore, smallest number of teeth=4×5=20.

Pitch line speed=600×5×0.262=786 feet per minute.

H.p. per 100 feet per min.=$\dfrac{25\times100}{786}=3.18$

From the table it is evident that horse power per inch of width at this speed=0.48+(50 per cent.)=0.72.

Therefore, the proper face of cast iron gear=$\dfrac{3.18}{0.72}=4.41$,

or, say, 4½ inches.

Proper number of teeth for gear=$\dfrac{600\times20}{100}=120$ teeth.

=120 teeth.

Where cast iron gear faces figure out greater than seven inches, it will be economical to consider cast steel gears, as by their use the face may be made one-half the size.

When high speed motors must be used in geared applications, experience has shown that rawhide pinions alleviate vibrations, noise, etc., to some extent, although not sufficiently to make unnecessary such precautions as should be taken where steel pinions are used. The value of the rawhide lies principally in its noiselessness of operation, especially where the rawhide is not shrouded, viz., where the design is such that the retaining brass cheeks ore cut below the roots of the teeth. With such forms of pinion, pitch line speeds of 3,000 feet per minute have been used successfully on motors up to 50 h.p. The strength of rawhide is approximately the same as cast iron, and this fact must be borne in mind when considering the use of rawhide pinions, as it will be evident that a steel gear cannot be driven to its full capacity by a rawhide pinion.

For the majority of motor applications, involute forms of cut gear teeth are to be recommended, as this form does not require the maintenance of exact center distances demanded by other forms of teeth. Also, because this form has been adopted as standard by the majority of gear manufacturers under the Diametral Pitch System.

Cushion Couplings.

In many applications, such as air compressors, plunger pumps, etc., the motor is required to be coupled directly to an intermediate shaft which usually carries a pinion for transmitting power to other parts of the mechanism. Application of a motor to this service should be through a cushion coupling for best results, as with the usual forms of rigid coupling the shocks and vibrations from the gears due to the cyclical variations in the load are transmitted back to the motor and are very destructive to the revolving windings. Vertical motors driving centrifugal pumps through long vertical shafts should always be connected together by means of a flexible coupling that will allow considerable displacement in shaft alignment as, owing to the absence of gravitational forces in the plane of revolution, all vertical running motors and shafts are extremely sensitive and destructive vibrations are easily started.

Flange Couplings.

For applications where the motors have to deliver a practically constant torque and where there is little liability of shafts getting out of alignment, such as centrifugal pumps, blowers, motor-generators, sets, etc., a flange or rigid form has been found entirely satisfactory. A careful investigation should always be made, however, of all factors liable to influence operation, as successful application of this form of coupling requires practically ideal conditions.

Items of Interest

The Arkadelphia (Ark.) Brick Company has ordered new machinery and is otherwise equipping its plant in a modern way, with the expectation of resuming manufacture on a much larger scale than before.

The Indiana Clay Company, producers of ground fire clay, and operating at Hillsdale, Ind., is anxious to get into communication with concerns in Chicago or other points in the Middle West, which act as sales-agents and distributors of raw clay.

W. E. Lyon & Co., of Carthage, Ill., formerly manufacturers of common brick, have ceased the manufacture of clay products and are in the market for a good common brick that can be sold in Carthage and vicinity for a fair price. Manufacturers of common brick will do well to communicate with W. E. Lyon & Co.

In an article recently published in the "Indianapolis News" the statement is made that in May, 1913, 303 buildings, out of 377 that were burned, were of frame construction. Fifty-two brick buildings were fired, and eleven of brick and frame combined, five cement block, two brick and cement combined, one of iron and slate and one of stone. Dwellings and barns furnished the fuel for 325 of the total 377, a poor commentary on the class of material and the method of building structures that house life. Surely, since men who build will not take heed, municipal officials should really act as "City Fathers" and prohibit the fire menace to life, that these figures indicate.

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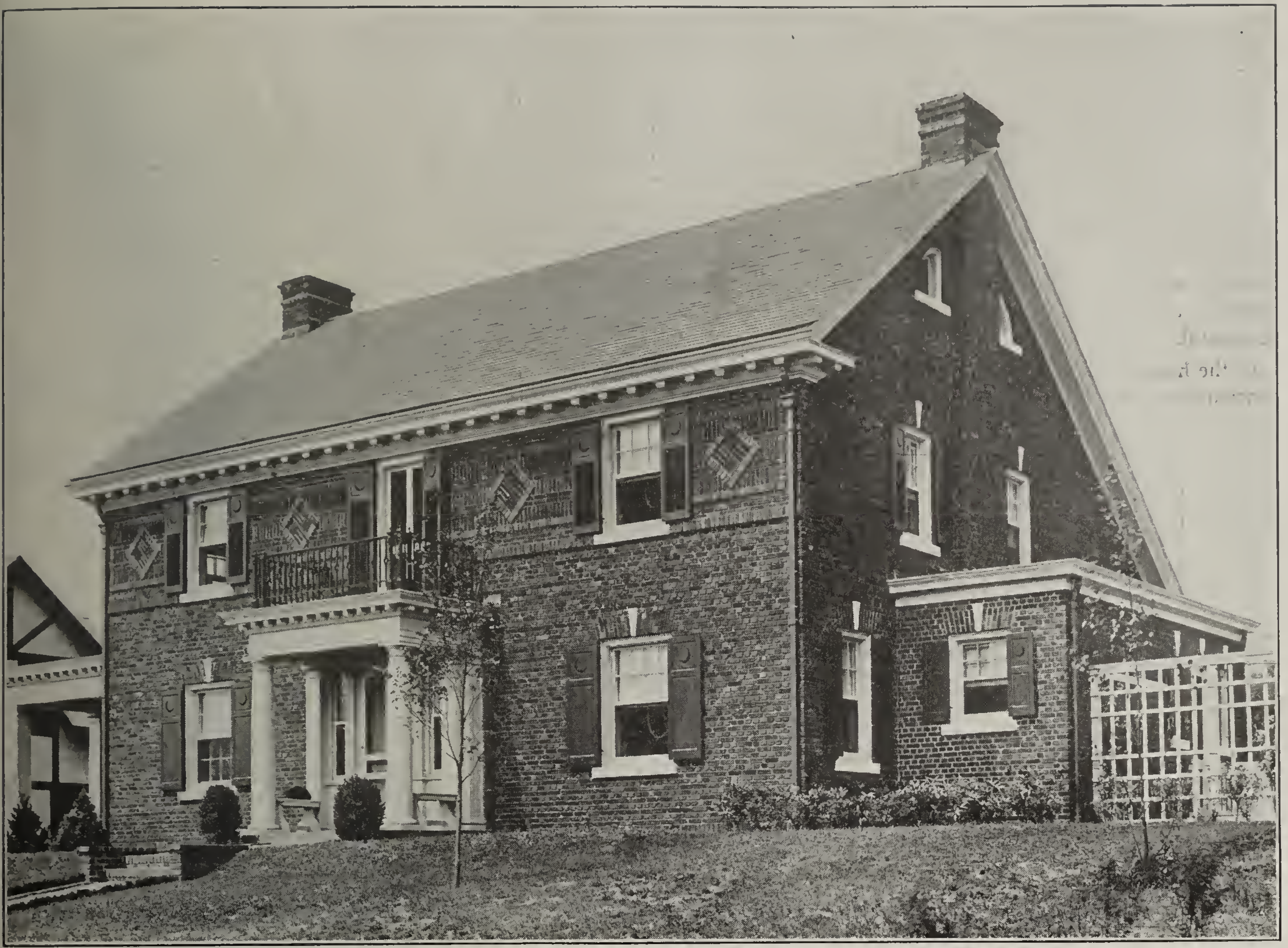
*For cast steel gears the values in hp per inch width should be increased 2½ times.



A Pure Colonial Brick House

OLD SOUTHERN HOMESTEADS ARE BEING REPRODUCED IN NORTHERN STATES WITH ONE VITAL DIFFERENCE—THE NEW COLONIAL TYPE IS BRICK

By Allen E. Beals

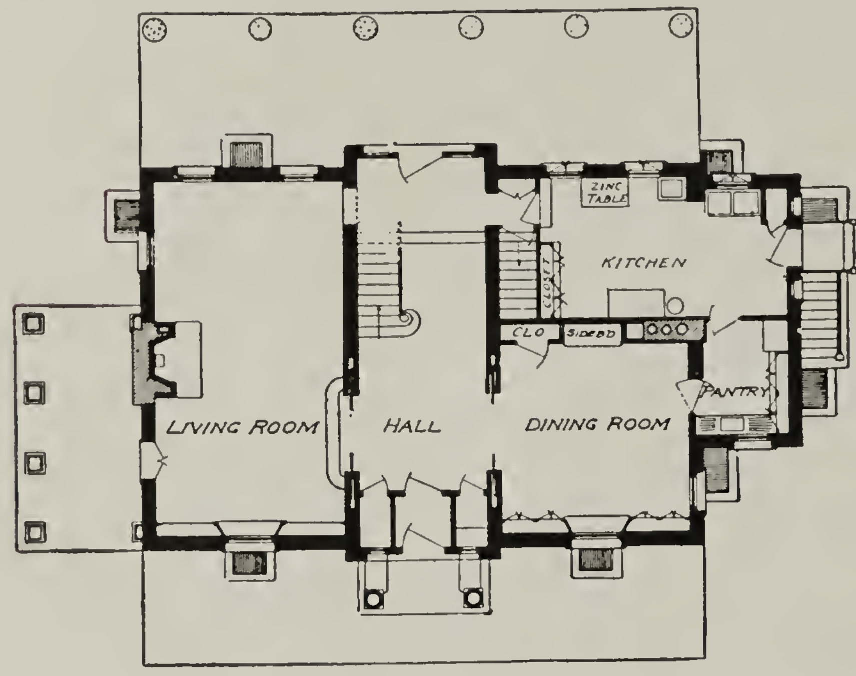
AUTOMOBILE tourists coming up from the South frequently comment on the continuity of the colonial idea in suburban home architecture, as they pass through New Jersey, New York and Connecticut. "There is no break," they say, "in the homey type of residence, from Florida to Maine; and to the foreigner visiting our shores for the first time, this tendency to adhere to the sturdy, yet comfortable type of house is making for a permanent distinctiveness to American architecture. It evidences, more than any other one thing in our national life, that the North and the South have become thoroughly and permanently united. The South is absorbing some of the northern energy and enterprise, but in no greater degree than is the North absorbing the wholesome, hospitable, substantial type of home that has identified the South ever since the country was born."

Even to the native who has been too engrossed with his everyday vocation to note the change that is at once apparent to the itinerant, the tendency has not been entirely missed. The trouble is he has not been able to identify the type, paradoxical as it may seem, in the face of the general change in materials used in the better grade of suburban home construction. The unstable, life-menacing frame colonial structure is gradually giving way to the more indestructible, fireproof residences that still follow in their lines, the mansions of the Southland. And the direct cause of this change is the advertising that face-brick manufacturers have been doing in popular magazines and even in daily newspapers, not to mention the color-process, follow-up literature that these same progressive manufacturers have sent broadcast over the country.

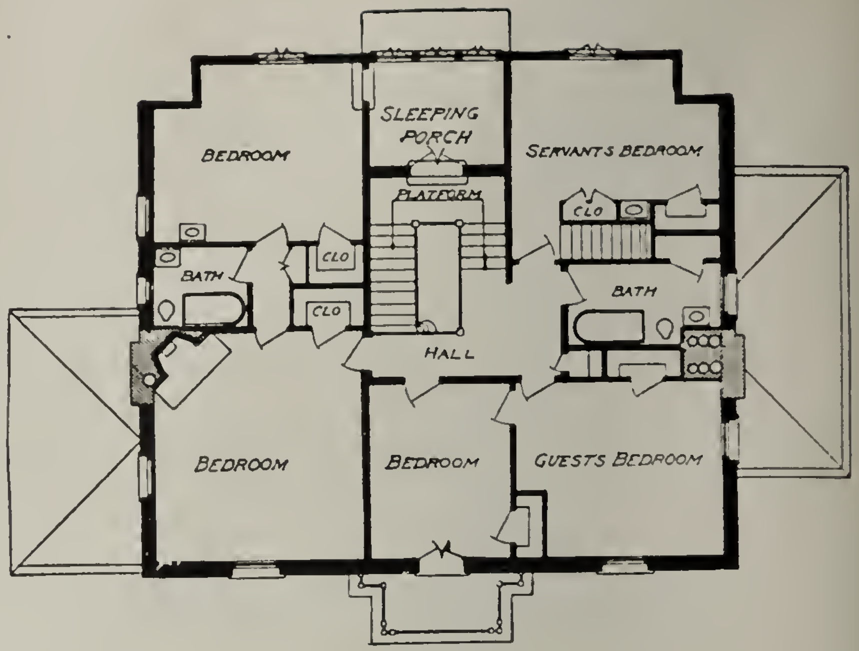
Perhaps the best illustration of what already has been said may be found in the new home of Mrs. Thomas T. Barr at Rye, N. Y., designed by Satterlee & Boyd, the New York architects. Here the porch columns, with the simple portico railing above the long roof angle sloping toward the rear, the kitchen extension, the wooden shutters with the carved out vents and the dentil block cornice are ear-marks of the colonial home. But try to imagine a colonial home built of unexpressive dull red pressed brick! Does not your mind's eye at once lose the colonial perspective and revert to some little "red schoolhouse on the hill" that you may have seen on your travels?

Here then is where the rough-face, polychrome brick has come to the aid of the architect. When it became possible, aesthetically, to carry out the colonial idea in a fireproof, permanent brick house, and newspaper and magazine advertising had begun to spread the news broadcast to prospective builders, it did not take long for the people to take eager hold of the idea. It came just about at the time when the concrete cow had reached the end of her rope of popular hysteria, and even the earlier examples were tremendously successful.

In the home of Mrs. Barr at Rye, every feature of colonial construction has not only been retained, but intensified by the use of "Garden Wall Tapestry" brick, laid in Dutch cross bond, and mingled shades from a rich red, through wines and purples, to a dark blue. The general tone, as seen from a distance, is that of a rich umber, toning into red, and it contrasts so well with the ivory-whiteness of the window frames, cornices, porches and trimmings, that one wonders that the gospel of "life in brickwork" was so long in being recognized.



First Floor Plan.



Second Floor Plan.

The house cost $12,300 and it is estimated that a frame house, of the same size and interior finish, would have cost at least $10,000, if not a trifle more. The difference is inconsiderable, when the factor of upkeep is considered, to say nothing of the artistic value that attaches itself to brickwork of this character. Here is safety from fire, freedom from the danger and doubt of concrete or stucco and the assurance of an honorable age—not decay.

The interior construction is Natco tile and the brick is applied as a veneer, making the exterior walls about a foot thick.

Competent critics consider this one of the best examples of small house architecture in the East and an adaptation of the colonial style to modern building practice that affords the best kind of an example to those who would carry the old lines of the southern homestead to the very uttermost verge of Yankeeland.

PUBLISH PLANS OF CHEAP BRICK HOUSES.

Texas Brick Manufacturers' Association Adopts Practical Publicity Methods.

C. C. Cates, of Dallas, Tex., in an address recently made by him, before the Texas Brick Manufacturers' Association, said that from $5,000 to $6,000 a year was being spent out of the association's funds, in newspaper advertising, the aim being, chiefly, to acquaint the public with the superiority of brick as a building and paving material. It was suggested, during the general discussion that followed the address, that plans should be drawn for moderately priced houses, built of brick, and that these should be furnished to the people through the medium of the press, thereby demonstrating the manifold advantages of building permanent homes. It was further suggested that estimates should be made by reputable builders in various parts of the state, showing what houses built in accordance with these plans would cost, and that these figures should be published with the plans. This, it was argued, would be the best way of showing the force of the claim that "brick is cheaper than frame." C. W. Martin, of Fort Worth, Texas, is president of the association and C. M. Harwood, secretary-treasurer.

FIREPROOFED WOOD GETS SERIOUS SET-BACK.

New York Building Code Excludes Wood of All Kinds In Buildings More Than 100 Feet High.

"Fireproofed wood" has received a heavy set-back in the proposed new building code of the city of New York, a code that will be discussed and used as a basis for new building codes all over the country. The new code provides that "no woodwork or other combustible material shall be used" in buildings upward of 100 ft. in height. A protest was made by manufacturers of so-called "wood fireproofing" against what they declared was unjust discrimination and Charles J. Hardy, who appeared for the "fireproofed wood" interests, claimed that wood, sheathed in metal, should be allowed, because that sort of construction had stood the severest tests. "The trouble about fireproofed wood," said Alderman Abram W. Herbst, the chairman of the committee, "is that our experts took samples of so-called fireproofed wood from several buildings and it burned just as nicely as ordinary wood. What we want is a fireproofed material that will stay fireproofed—not merely for three or four months, but for good." Despite this and other protests, friends of the code are confident that, with a few alterations, it is pretty certain to be accepted, and become a law.

Selling Face Brick on Public Buildings

BUILDING COMMITTEES THAT INSIST UPON LOW PRICES MAKE IT IMPOSSIBLE TO GIVE FIRST QUALITY SERVICE AND PUBLIC WORK IS UNDESIRABLE AS WELL AS A POOR RECOMMENDATION FOR FACE BUILDING BRICK

By D. W. Fredericks

THE remarkable situation which this article portrays is of intense interest to every brickmaker. Is it a fact that few of our monumental public buildings, faced with brick, are representative of the best service of the factories that secured the orders? Or are they, as Mr. Fredericks claims, outlets for inferior grades of face brick, or for mixed shades that are so poorly mixed as to render the walls unsightly? Are brickmakers so shortsighted as to believe that they can stop the progress of competing materials if, in work that public ownership should make a public trust, they pillory themselves and the craft in the minds of future generations, by furnishing a grade of material that will be remembered for its poorness long after the low price is forgotten?

MODERN selling methods, as applied to face-brick for public work, like schools, libraries and hospitals, are the wonderment of men engaged in other lines of trade, and have more to do with the discrediting of face-brick, face-brick manufacturers and face-brick salesman, than any other part of the business.

In the beginning, they are wasteful. In localities where the large number of plants makes competition keen, there is, as a rule, so much money spent in the attempt to secure the order, that the entire profit on the contract is no greater, if as great, as is the total amount expended for railroad fare, hotel bills and salesmen's salaries by the competing firms. It is no unusual thing to see eight or ten representatives of as many different plants, traveling a hundred miles or more, two, three or four times, to attend "lettings" (not to mention preliminary work with the architect) and staying over night at local hotels—men who are, frequently, the highest salaried men on the payrolls of the plants they represent. And all this expense is incurred *for a chance* of securing an order of from 100,000 to 200,000 face-brick, the profit upon which will not be more than $2.00 or $3.00 per M., at the outside.

This class of "competition" is confined largely to manufacturers. The dealer is generally too wise to take part in a game in which he cannot see a reasonably fair chance of making a profit, and, as manufacturers, selling "direct," seldom ask a higher price than that which they are receiving, right along, from the dealer himself, he (the dealer) sees no reason for his presence at a "letting" of this character.

And what is the result? Since the plants add nothing, or next to nothing, to cover the added selling expense, they *are in the position of gambling with and for the money they, themselves, contribute in the way of salary and expenses,* the "winner" taking "all"—in the shape of a profit that is but little more than the total amount spent by the manufacturers competing. Each has his time to win, each his time to lose—and the average is about so fixed that in the long run each manufacturer finds he would have been better off to have staid out of this public work competition, and to have sold his output through dealers, at as good a price, but without the selling expense.

The buyer—be it school board or building committee—buys at a lower figure than the material should bring, for the same brick brings the same factory price, plus the same proportionate freight, plus a dealer's profit (which includes selling expense) if sold in a city where manufacturers do not "come in direct." And as a penalty for buying at a lower price, the buyer is exposed to the chance of a poor delivery of brick.

Face-brick salesmen differ as widely as does the commodity they sell, but it is a pretty well set rule that the man who brings home the greater part of this public work is the man who has the greatest gift for misrepresentation. He is the man who can fool the committee into believing his "graded seconds" or "odds-and-end-firsts" are equal to the best brick on his, or the other fellows' yards. He is the man who can tell, convincingly, the story of "an odd lot" of 100,000 or more, that are "just as good as our regular brick, but a little off from our standard shades" and, like the

"Light that lies in women's eyes
Lies and lies and lies and lies"

and then goes home and misrepresents what was sold and bought.

For this "slick" salesman—frequently the star performer of a sales force—has a change of heart and mind and language, when he explains to the plant manager what he sold, from what was in his thoughts and on the tip of his suave tongue, when he had his brief hour before the building committee. He "takes a chance" on "putting one over" and can be "spotted" by the plant manager, by the trail of "trouble" he leaves in his wake. His assumed indignation at the determination of the architect or contractor to secure "something better than they really bought" should be a storm signal for those who employ him.

Who has not found, in public work, an ominous rumbling of threatened rejection on the delivery of the first carload? Who is there that is not familiar with the regular process of "sorting the first car" and the laying aside of the rejected brick—brick that are not "removed from the premises" in accordance with the architects' specifications governing rejected material, but which are, almost invariably, subsequently used—with a streaked wall as a consequence?

And again, what is the result? Public buildings that should be representative of the very best face-brick service—for municipalities are not so poverty stricken that they must needs use inferior brick—are, as a rule, perpetual reminders that face-brick men have not forgotten the days when all public work was public graft, and are willing to play the game that way, forgetting the awakening of public spirit and forgetting the pride they should have in their product and its service.

And "game" is the right word. The school board or building committee, as the case may be, plays the magnitude of the order against the "frenzied finance" of the manufacturers, depending upon the advertising value of the job to bring a lower price. The salesmen are pitted against each other, made to wait, sometimes for hours and days until the committee has "let the general contract" and then given a short time to "say their say" and begone. Whispers of a "pull" is one direction—a particularly low price given somewhere else, a general admonition to "sharpen your pencils" and each man goes into the committee room prepared to quote "a price that will get the business"—mentally reserving the right to *give that committee just what it pays for,* not what it buys.

There are, of course, exceptions to the rule; many contracts are secured by the attitude of the salesman who states frankly that he has no bargain to offer, other than a favorable freight rate, a standard of service that is inflexible, and a reputation to sustain. He smilingly passes over the "advertising value" of the operation and states that he expects to make a fair profit on the sale if he secures the business. He impresses the architect and contractor with the truth of his statements and, as a rule, they both know something of the plant he represents. But building committees are hybrid, and, while loudly disclaiming any desire to "put anybody out of business," consider their duty, as members of that committee, poorly performed if they do not buy "at the lowest possible price." Were a dealer interested in the sale, he could act as umpire and define what the committee actually bought and what the manufacturer actually sold—but the building committee has eliminated the dealer and listens attentively to the opening slogan of the plant salesman "You are buying direct from the manufacturer and 'saving' the dealer's 'percentage.' "

With the dealer eliminated, and the transaction radically wrong in principle from its very inception, is it any wonder that the face-brick manufacturer looks upon public work as an outlet for his "off-shades, seconds and culls" and, while he recognizes the fact that his star salesman is "constantly in hot water," values him, because he "seems to get a lot of big work" and does not look too closely into the manner of the getting? "They're a lot of farmers, anyway, and wanted to buy something for nothing" excuses the friction that accompanies the service of the job, and the final settlement. *The blow that such service gives the reputation of the plant seems to be entirely lost to view.* Is it a fact that face-brick manufacturers, unlike their fellow men, can "fool all of the people all of the time?"

Has the time arrived for a bettering of the condition? Other lines have, by various methods, eliminated the expense, the trouble and the somewhat questionable methods that, in the past, were a part of all public work. Face-brick men can do the same, by methods that are ridiculously simple; the first—which obviates all of the others—is the adoption of a rule to sell public work only through *dealers.* In the aftermath, the wording of the dealer's order to the plant will safeguard both the manufacturer and the committee. It might not be far afield to submit that wording to the architect, the contractor or to the chairman of the building committee, in the event of it's being a case of anything else than "strictly first quality."

Or, if this be impossible, there is another way—adopt a rule that will provide that no "seconds," "off-shades" or other grades that are not actually "first quality and of highest standard" shall be served on public work.

Exit the suave salesman with "something just as good as firsts"—but not!

In this way, when you did get a public job, you would also have a reference job to point to—one that had a real advertising value, for it would bespeak your *best quality and your best service.* Why should the public buy so cheaply and so badly, while a corporation buys so dearly—and so well?

Adopt a rule that you will not submit yourself—or your salesmen—to the ignominy of being made to wait hours—perhaps half a day—while the committee is deciding upon the general contractor. Far too often the "figures run over the estimates" and the small army of face-brick men are told there is "nothing doing for several weeks." Since the face-brick must be chosen by a committee that knows more about "ships and shoes and sealing wax" than about building material, let them set a time, after the contract has been let, and after they know whether they can, or cannot pay a certain fair price for their brick, when they will meet, and decide.

Let them be given to understand that, since they do know mighty little about face-brick, face-brick manufacturers or face-brick salesmen, that a well ordered system will be followed for their protection. Let someone in authority, architect, committee chairman, or committee majority, decide upon the general color and contour and price of the brick that will be bought. Surely "red brick" would give a wide field for choice and even "smooth red brick" or "rough red brick" would not narrow it down so far as to be a bar to a healthy competition. *Few, if any, face-brick salesmen try to guide committees in the choice of general color. They try to find out what the majority of the committee wants, and then follow the line of least resistance.* Since there is more or less of the element of chance in the whole matter, why not "play the game" according to some rule, instead of without any?

Once the committee had stated that they would "look at brick" at a certain time, and upon a certain day, and that they would only consider "red," or "gray," or "flashed" or some equally definite kind of brick, and setting that day far enough ahead to permit of proper samples being sent, why not have a definite number of samples included in the "rules"? In these days of "mingled shades," twenty is none too few, forty none to many. That is *twenty to forty* of each kind of brick you submit, to show honestly and properly the service you will give, both as to assortment of color and quality. And let the best *brick,* not the best *man,* win!

He wouldn't have to be a high priced salesman—he wouldn't have to spend a day or two, going around and getting acquainted with the committee, he wouldn't have to be able to draw a verbal picture of the beauties of your brick that would make that committee feel they were, in a way, buying him, rather than his brick—he would just have to be a brick-man, posted on his own product, on your ability to deliver promptly—and, incidentally, good enough to be able to defend your product from the assault of the "star" salesman, who, with the habit of misrepresentation strong within him, might turn to misrepresenting you, instead of his own people. Outside of that, the brick would "talk for themselves" and bring home the business at a fairer profit, under fairer conditions and with a promise of a fairer future for face-brick generally, than it would now have, did it depend upon the reputation given it by the brick public buildings in this fair land of our endeavor.

Changes in Ohio's Faculty

EDWARD ORTON, JR., DEAN OF THE COLLEGE OF ENGINEERING AT OHIO STATE UNIVERSITY ANNOUNCES NEW APPOINTMENTS IN CERAMIC DEPARTMENT

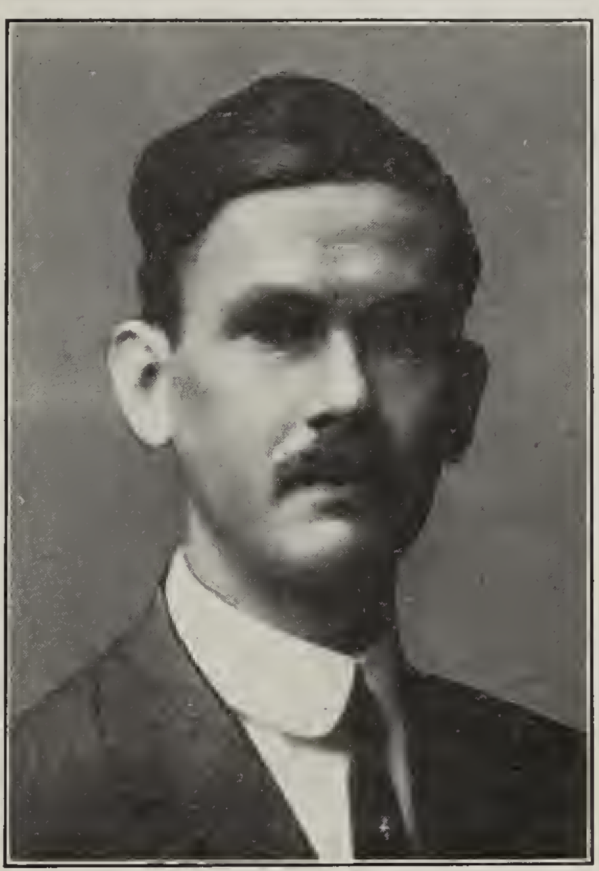
INTRODUCING two new members of the faculty, in the ceramic department of the Ohio State University, at Columbus, Ohio, Edward Orton, Jr., dean of the College of Engineering, writes that Arthur S. Watts, formerly connected with the U. S. Bureau of Mines, as a ceramic expert, now becomes Professor of Ceramic Engineering and C. B. Harrop, who has been connected with the department for the past two years, as part time instructor, has been promoted to the position of full time Assistant Professor of Ceramic Engineering.

Professor Watts takes the place of Professor Forrest K. Pence, of Zanesville, Ohio, who was in charge of the ceramic laboratory work of the senior year of the course; he will carry the junior courses in physical chemistry, as applied to the silicates and, in all probability, continue his writings upon ceramic subjects, which have been numerous and authoritative. He has to his credit some eighteen or twenty articles in the Tran. Am. Cer. Soc., and has written upon electrical porcelain for the "Electrical World." His work has brought him, at one time and another, with wall and floor tile manufacture, and the various processes that enter into the making of white ware, stoneware, and the many forms of porcelain used in the production and transmission of electricity.

Arthur S. Watts.

Professor Harrop brings to his branch of the work a thorough preparedness, he having graduated as a mining engineer in 1902. He spent some time in the Portland cement industry, as chemist and subsequently was engineer and estimator for three years, with a large company that makes a specialty of excavating and hoisting machinery.

The last seven years of his career have been chiefly along ceramic lines, he having been engineer and designer for W. D. Richardson for three years, and later held the same position with the Richardson-Lovejoy Engineering Company, in which he was also secretary. Since 1910 he has been manager of the Ceramic Supply & Construction Company, manufacturing clayworking machinery and controlling apparatus for kilns and driers. His experience in this field, therefore, puts him in the closest touch with not only the designing and building of clay plants, but the designing and building of clay-working machinery.



C. B. Harrop.

Professor Orton says that nine young men graduated during the past year, and that many of them had a choice of more than one well paying position upon leaving the university. The variety of industries represented in this choice included fireproofing, architectural terra-cotta, electrical porcelain, enameled iron and window glass. There were, he says, calls for many more graduates than were available and he is glad that this year's registration is increased, the number being between forty-five and fifty.

CHANGES AT ALFRED UNIVERSITY.

Earle T. Montgomery, E. M., added to Faculty at New York State School of Ceramics.

The New York State School of Ceramics at Alfred (N. Y.) University has recently added to its faculty Mr. Earle T. Montgomery, E. M., as assistant professor. Mr. Montgomery is a graduate of the Ohio State University. He has had several years of practical experience in manufacturing and with the Bureau of Standards, in the department of Clay Products at Pittsburgh, Pa., and has taught one year at the Illinois State University. Mr. Montgomery is a member of the American Ceramics Society and has contributed several papers to its Transactions.

Importance of the Fuel Question

EXPERT IN MANUFACTURE AND BURNING OF CLAY WARES DISCUSSES VARIOUS METHODS OF FUEL CONSUMPTION

By R. D. McManigal

IN publishing the drawings that accompany this article "Brick & Clay Record" warns its readers that the furnaces illustrated are fully covered by patents and that it is not only illegal, but unsafe to use the drawings without permission from the manufacturers, as well as receiving definite instructions for installation, as the dimensions vary, depending upon the fuel used and the product to be manufactured.

THERE recently has been considerable written on the fuel question, and it is an undeniable fact that this most important feature of the manufacturing of clay goods has not been given the attention it should have in order to reduce the cost of production.

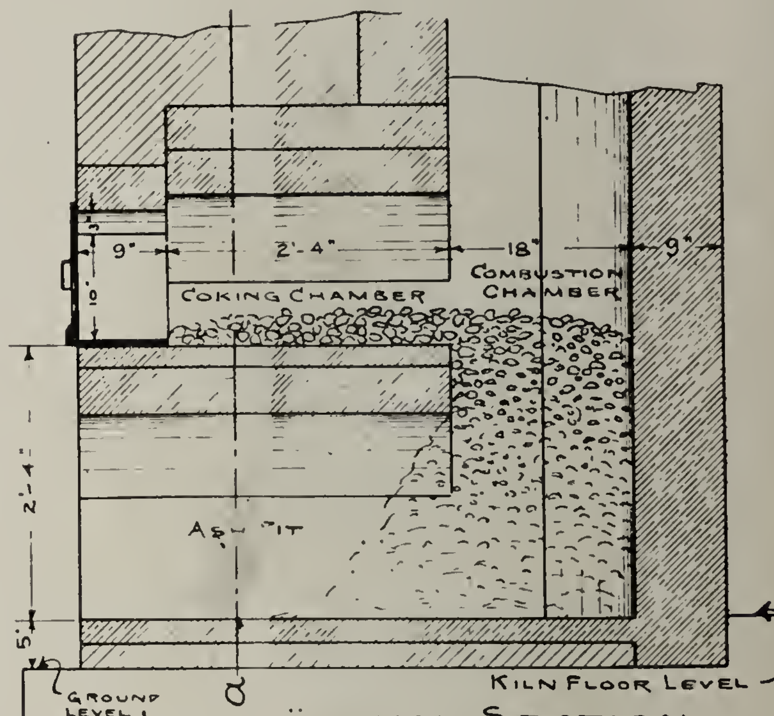
In the first place, how can more perfect combustion be obtained in the use of our fuel without too great an expense? We have the continuous kiln system, which is not without its merits in the way of a fuel saver, but which is not within the reach of all manufacturers for want of sufficient capital, and the adoption of which, in many instances, would require the wrecking of substantial kilns already in use. In many instances the continuous kiln has proved a failure—perhaps through no fault of the kiln, but simply for lack of proper knowledge in operation of same.

We also have many different types of furnaces in use. There is the horizontal grate bar, the basket grate, the pigeon hack and a device which is claimed to be an inclined coking table. These all have their disadvantages.

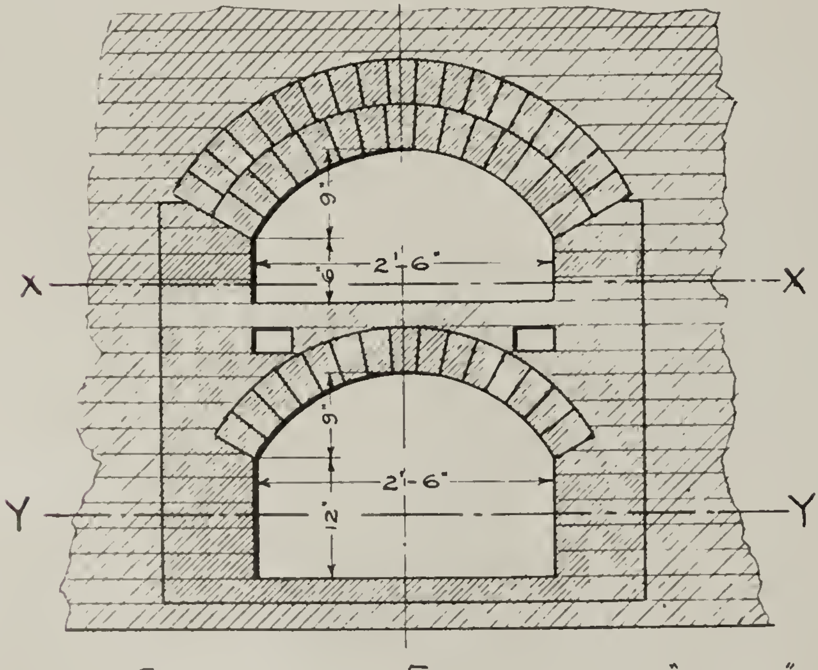
After years of careful study and experience in the manufacturing and burning of clay goods, the writer has been able to invent a furnace which entirely eliminates all the objections embodied in the afore-mentioned furnaces. The device is of simple construction, not as expensive as most of the others, can be maintained with much less repairs, and requires no grate bars and less fuel.

The McManigal Grateless Furnace, which is patented both in the United States and Canada, is designed to meet conditions of different localities, both as to grade of fuel and material to be burned. The capacity of the furnace is always gauged to furnish sufficient coke to maintain heat for bringing about satisfactory results. It always will give a clearer and better grade of goods than can be had with other furnaces.

The fireman can so regulate the heat in this furnace as to give any desired result. He can get a clear, bright burn or be can make a flashed brick. The heat in the kiln can be changed from an oxidizing condition to a reducing fire in a very few minutes, or vice versa. The coking table is horizontal, and for this reason is a considerable advantage over the inclined plane as the coke cannot be delivered into the combustion chamber except as the fireman pushes it back. The combustion chamber is inside the kiln walls. Thus combustion takes place inside the kiln and not under the kiln walls as in the other furnaces. It readily can be seen how advantageous this one feature is as it greatly lessens repairs to the kiln walls.



LONGITUDINAL SECTION



SECTIONAL ELEVATION "a-a"

The refuse from these furnaces is much less than that from any other design, as the fuel is almost entirely consumed. There is no back lashing or fires flying out about the kilns.

In burning bituminous coal in the ordinary furnace the fuel necessarily must be thrown on top of the live coals already there. This serves to temporarily check the fire as well as the flow of heat into the kiln.

The complete burning of carbon, a component part of soft coal, requires a high heat at the point of combustion—i. e., at the surface. Fresh coal thrown upon burning coal confines the heat underneath, where the mass is rapidly vaporized, which, rising to the surface, does not meet with sufficient heat to burn completely; hence large volumes go off in smoke. This we overcome to a very great extent by means of a coke and smoke burning furnace.

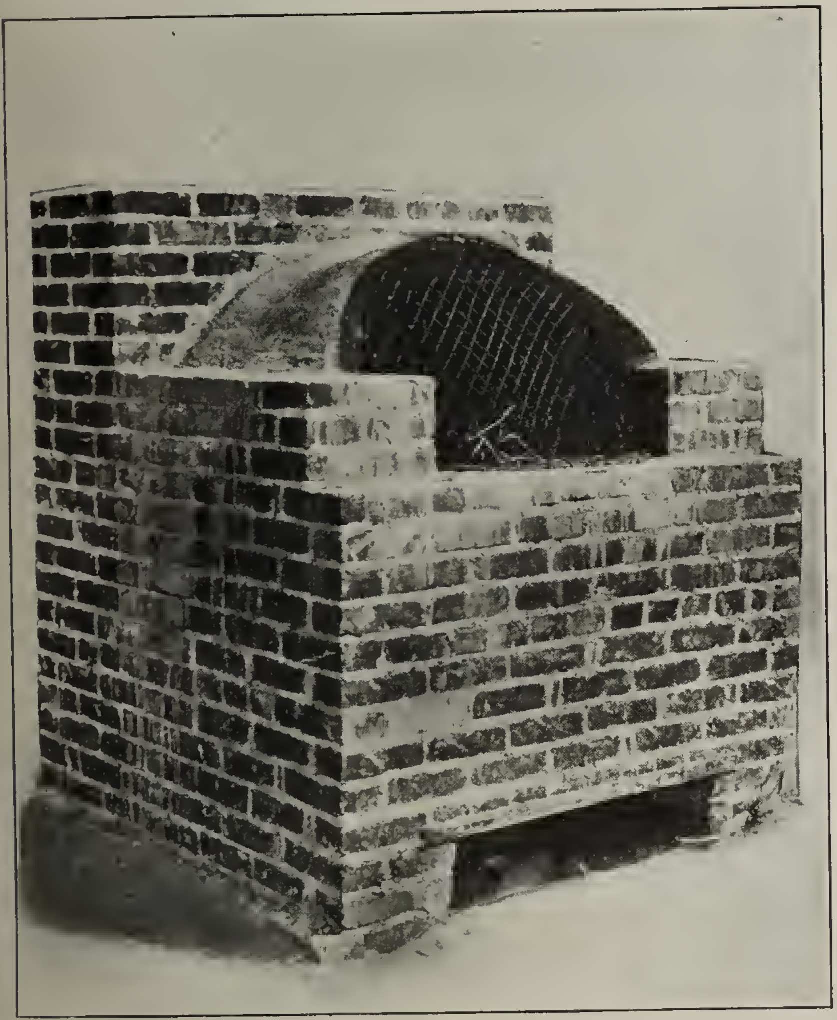
In using this device the coal is first fed into the furnace through the door, where it undergoes a coking process, thus burning successfully the volatile portions of the gas and smoke as they are gradually drawn back from the fresh coal on the coking table, by the natural draft of the furnace, into the combustion chamber directly over the glowing coals, which have been previously freed of their more volatile parts. This process may be accelerated or retarded at will by simply regulating the amount of air at the door. When the coking process is complete the coals are pushed back into the combustion chamber. This process of firing is continued during the entire burning of the kiln.

Owing to the relative position of the coal and fire, the combustion chamber being on nearly the same plane as the coking table, the fresh coal does not decompose more rapidly when first charged than hours afterwards, giving ample time to burn the smoke and at the same time giving a steady, even heat, instead of great volumes of smoke and spasmodic heat, as is the result when fresh coal is thrown directly on the burning fire.

This type of furnace can be operated also to have all the elements of a gas producer.

Municipal Incinerator Built for Seventeen Dollars

Finding that it was cheaper to reduce waste paper and other light, bulky and inflammable refuse to ashes, before taking it to the public dump, the city officials of Glendale, Cal., have decided upon the incinerator plan, and have adopted the type shown in the accompanying illustration.



This incinerator is 4 ft. square and the chimney portion is 5 ft. in height. The interior dimensions are 3 ft. by 3 ft., while the height of the enclosure is about 4 ft. At the upper front side is an opening through which the material to be burned is thrown, and over which a wire screen, with a two-inch mesh, is replaced, after the refuse is inserted. The flue is six inches by twenty-seven inches and is covered at the top by a screen, to prevent any large pieces of the burning material escaping.

There is a large draft hole at the lower portion of the front side, this being eight inches by twenty-seven inches, the brickwork above the opening being supported by a strip of one-inch angle iron. A fire-grate of one-inch angle iron is built on the inside of the incinerator, just above the draft opening.

These incinerators cost about $17 each, erected in place, and are installed at convenient points in the city, particularly at the rear of large business houses, the disposal of the paper and other light waste from these establishments having formerly been one of the economic problems of the thriving California municipality.

Arrangements are being made to have the refuse that is swept or carried out of the various establishments, brought to the nearest incinerator immediately after the close of the business day, and the burning is done during the early night hours. The ashes are sufficiently cooled by morning, to be gathered up by the public carts and, the bulk being infinitesimal, as compared to the bulk of the waste previous to burning, a great economy is effected. Plans are on foot to make some use of the ashes, it being claimed in some quarters that they will constitute, in themselves, a valuable by-product of this public-ownership plan.

Silica Brick and Its Similarity to Sand Lime

The material of silica brick resembles that of sand-lime brick more closely, say S. W. Parr and T. R. Ernest, in Bulletin No. 18, Ill. St. Geo. Sur., than does any other material. Silica brick are made quite extensively for use as refractory linings for furnaces. They consist of sand grains, cemented together by true calcium silicate. They are prepared by mixing lime and silica in the proportion of about three to four per cent of the former, to ninety-six to ninety-seven per cent of the latter, subjecting to great pressure in moulding, and burning at a rather high temperature. The lime reacts with the silica of the sand forming a kind of glass which cements the sand grains together. The difference between a silica brick and a common sand-lime brick is that in the former, little time is used, and the hardening is done by firing in a kiln, while sand-lime brick contain much more lime, and they are hardened by the action of saturated steam under pressure. In silica brick, the bond consists of a glass containing no water, while in the case of sand-lime brick, the bond is not a glass, but a hydrated silicate, very much akin, no doubt, to some of the constituents of set Portland cement.

Selling Brick

SALESMANSHIP AND ITS APPLICATION BY THE MANUFACTURER OF BURNED CLAY PRODUCTS

This is a series of heart-to-heart talks on one of the most important and most neglected departments in the successful conduct of a clay product plant. Mr. Wells also will review current advertising by clay plants, as publicity is one of the essentials of good salesmanship. Manufacturers are invited to submit copies of their advertising for critical review.

Creating a Market

Heart Talk No. 8

By Iverson C. Wells

EVEN the most inexperienced can sell his wares if he knows where there is a MARKET for them. To LOCATE, or CREATE a market and THEN SELL is another matter, and that is where the salesman who has equipped himself in every possible way for his work has it over the fellow who has trusted in luck to swing him across the line to success.

The salesman of burned clay products occupies a peculiar position in the commercial world. While his wares have been known and used for thousands of years and have proven their superiority by actually standing the test of all these years, their real value is little known today.

The buying public knows, of course, that there are brick and it knows there are vitrified sewer-pipe. It knows there are other useful articles and utilities made of burnt clay, but its knowledge is so meager and its information so slight that it considers them out of reach or not worth while paying the difference in price to obtain and enjoy.

This situation existing, it is necessary therefore, for the clay products salesman to actually create a market before he can dispose of his wares, and that problem is the problem that confronts him.

* * *

HOW shall the salesman go about it to create a market? Let us profit by the experience of the salesmen in other industries. Take, for instance, the automobile. This is comparatively a new selling proposition, as the first automobile was placed on the market only within the last decade and a demand had to be created and a market opened up.

In what manner did the automobile manufacturer find a market for his wares? Did he do it by sitting at his desk and WAITING?

Did he say to himself: "Well, I have something the people ought to possess—something that is of service to them—something that will bring them nearer to their homes, closer to their business, and directly in touch with their customers. I have something from which a man and his family and his friends may derive pleasure. I'll sit here and wait until he comes and buys"?

Do you suppose for a moment that he did that?

What he DID do was to organize a selling force. He employed a man who understood the science of selling and that man hired men that could and would do his bidding and do it in an intelligent and understanding way. And that organization of salesmen started out to let the buying public know what they had to sell—why they had it to sell—and took advantage of every opportunity to keep the people informed on these points.

Today the automobile is in common use and so generally has it been adopted that most of the evils of the high cost of living are attributed to it.

IT IS POSSIBLE for the salesman of burned clay products to accomplish practically the same thing if he goes about it in the same business-like aggressive manner. It is certain that he cannot remain INACTIVE and participate in an ACTIVE part of the commercial world. His rivals—cement, lumber and gypsum—are too much alive to permit that.

There is only ONE way to create a demand and to establish a market for ANY product, whether that product be a utility or a luxury, and that way is through PUBLICITY.

Publicity does not necessarily mean printers' ink, for there are various methods of letting the people know what you are manufacturing and what you have to sell, but printers' ink is one of the best of these methods and men have proven this by actual tests.

The progressive manufacturer of any clay product does just as the automobile maker did—he first organizes a selling force. Whether that force be a one-man organization or a twenty-men organization, depends, of course, upon the capital invested and the output to be disposed of.

It is certain, however, that the man who DIRECTS the selling campaign will UNDERSTAND and PRACTICE MODERN METHODS. He will know all the arts and artifices—he will have at his fingers' tips all the schemes and plans for making his wares popular.

* * *

THE FIRST STEP in opening up a market—the initial effort in creating a demand, should be in seeing that what you are making is made in the best possible way and that it can stand all the nice things that will be said about it by your salesmen in the publicity campaign in which they are an important part. This is essential, because the best regulated selling campaign will come to naught if your product be forced back on you through faulty manufacture.

A series of newspaper advertisements should be prepared. If you are incapable of preparing high-class, "pulling" advertising copy it is better that you employ someone who can to do it for you.

This advertising should explain the merits of your product and it should contain the same selling arguments your salesmen use in TALKING to a customer. The entire series of advertisements should be prepared in advance for a season's advertising. Arrangements with your local newspaper as to rates and position should be made in advance and an appropriation to cover the cost of the entire campaign set apart and kept intact.

Your salesmen should be permitted to read every newspaper ad as it is written and to keep posted in whatever publicity work you are doing, so that they will work in unity with your campaign.

Circular letters, follow-up letters, booklets, and all the other forms of printed advertising matter should be prepared systematically—not hap-hazardly, and these USED.

Your salesmen should be taught to talk burned clay night, morning and noon.

Your entire organization should live in a perpetual atmosphere of burned clay.

Every possible chance to teach the buying public the advantages of using burned clay and using the kind you make must be sought and taken advantage of.

Flood your farmer with literature on the advantage of building his silos of imperishable clay, his barns of hollow tile or brick and his own residence of the only fireproof material.

Smother your fellow townsmen with advertising literature proclaiming the merits of brick.

When you land the contract for the county building or the Y. M. C. A. or make some other good sale, see that the public knows about it through your newspaper advertising and when the building is completed see that a picture of that structure is printed either in the news columns of your home paper or in your own advertising space and that your name and the name of YOUR material is given a prominent place therein.

Be aggressive—be alert—never let up. You will be surprised at the interest you will stir up not only among the buying classes but also in yourself and in those who are working to advance YOUR interests.

To create a demand and to locate a market—advertise. Let the people know you are alive—that your product is the ONLY product and that YOUR way is the ONLY way.

Western Stoneware Company May Rebuild at Macomb

Residents of Macomb, Ill., are anxiously awaiting a decision in the matter of rebuilding the Western Stoneware Company's plant, to replace the buildings recently destroyed by fire. The reopening of this plant would give employment to a large number of potters and the circulation of a several-thousand dollar payroll each week. If the factory is rebuilt in Macomb, the company expects to erect a building that will be modern in every respect and that will have the latest improvements in the manufacture of the class of material which makes up the greater part of its product. One strong argument in favor of Macomb is that the labor conditions are most excellent, many of the potters owning their own homes and being inclined to work where their families are located. Another point is that the company owns a good site, the location being one in which shipping facilities are all that could be desired. The Board of Trade is using every possible effort to secure a favorable decision.

How Cox Got Into the Game

BEING THE STORY OF A YOUNG MAN WHO FELL HEIR TO A RUN-DOWN CLAY PLANT

By Iverson C. Wells

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SYNOPSIS OF PRECEDING INSTALLMENTS.

A dilapidated clay plant in Ohio is left Albert Cox, a young insurance solicitor, by his grandfather. Cox visits Mauryville with the idea of selling the plant to some one. Selling is his profession and he argues that any one who learns the principles of salesmanship should be capable of selling anything. He finds, however, that the clay plant has not been run for years and that the clay supply is exhausted. The machinery is antiquated and Sawyer, the old foreman, tells him it is only good for junk. Cox considers cutting up the land into city lots, but the gaping holes in the clay pit soon convince him that his task is hopeless, and he is about to give up in despair when he meets Charlie Simpson, a student at the state school of ceramics, who is home for the summer vacation. Simpson, in exploring the neighboring hills, finds an excellent deposit of clay on one end of the Cox estate. Cox becomes interested in the young man's enthusiastic report and, despite Sawyer's despairing advice, plans to turn the discovery to practical use. He obtains an option on the adjoining property and offers to sell his holdings to Brown Bros., a prosperous firm of clayworkers in a nearby city, which is seeking a new location. The eagerness with which the Brown Bros. take up his offer suggests to Cox that young Simpson was right when he said the clay was of an unusual quality, and getting a sample brick made he slips into Cleveland to consult an architect. It is his intention to verify young Simpson's claims with the idea of establishing a value on the property. To his surprise the architect is very enthusiastic over the brick and offers to take 200,000 on a 60-day delivery. On the impulse Cox agrees to furnish the brick. A visit to other architects gives him tentative orders amounting to 1,000,000 brick. This decides Cox and he determines to go into the brick business. He starts out to rehabilitate the old plant with the assistance of Sawyer and young Simpson. After a visit to the Steinway Brick Machinery Co.'s plant at Pressville, Cox selects his equipment and for two weeks work is pushed night and day in the new plant. The severe strain soon tells on the men and Sawyer and young Simpson finally clash. Cox interests a Chicago dealer in his product and closes a big contract with him whereby he finds it necessary to plan for an enlargement of his plant. He makes arrangements with a machinery house to supply him with additional equipment when he needs it. Late one night Cox discovers his plant on fire and seeing a fleeing figure shoots. It develops that he has shot Sawyer. The old superintendent is seriously wounded and is in danger of losing his voice, but finally recovers under Cox's careful nursing and it develops he was wounded in his attempt to capture a discharged employe who sought revenge with the torch. In the course of time the first burning is completed and Cox proceeds to load his cars for the Cleveland shipment. A strike ties up all the railroads and Cox is apt to lose his sale through failure to deliver on contract time. He hits on a happy idea. He orders 15 motor trucks and proposes to utilize them in rushing his brick to market.

THE next three or four days were busy ones for me. The carload of "Goldfields" which we had shipped from Mauryville the night the strike order went into effect, tying up all the Central West lines, were unloaded and hauled to the site of the new building which Henderson was putting up. I got the first truck-load of brick on the ground early on the morning of the last day for first delivery, in accordance with my contract and by noon the last brick in the shipment had been delivered.

In the meantime I had seen that four motor trucks—all that the Cleveland Motor Truck Livery could supply at that time—were on their way to Mauryville. Shortly after noon I managed to find two more idle trucks and arranged for eight more for the following day. I took my seat along side of the chauffeur of the last truck to depart and got into Mauryville late that afternoon.

Sawyer and Simpson already had seen to the loading of the first trucks to arrive and we worked late into the night loading the others. It was nearly 11 o'clock before we had sent the last truck off to Cleveland loaded with "Goldfields" and when I sought my bed that night it was with tired, aching bones that I rolled into the covers, but I had the satisfaction of knowing I had solved what, for a time, looked like an impossible problem.

The string of motor trucks carrying the "Goldfields" into Cleveland created no little sensation and the natives who turned out to see the caravan looked upon it about the same way they would a circus parade. The Cleveland papers give me and my strenuous efforts to fill the terms of my contract with Henderson, in the face of almost insurmountable difficulties, more space in their reading columns than any other one single news "feature" of the day and the publicity I gained, without cost, was worth more to me than the cost of the trucks.

As a matter of fact that one incident and the hungry attitude of the press to play it up, gave me my first idea for a real publicity campaign and started me on the road to a carefully planned advertising appropriation which has placed my business where it is today.

It is unnecessary to give the details of the next few days, as there was nothing of interest to relate. We completed the delivery without mishap and established the fact that brick-paved country roads were of more use than merely to look pretty. I might add that today I own a number of heavy motor trucks and that I maintain a regular delivery system over the brick-paved roads from my three plants into the Cleveland market.

It will be recalled that I held a contract with a Chicago face brick dealer to deliver the entire output of the Mauryville plant and, acting under telephoned instructions from Cleveland, both Sawyer and Simpson had carried on the manufacturing end without interruption.

There was additional equipment to purchase, however, and then, too, the purchase and installation of a new and more adequate power plant. I spent several days with Sawyer and Simpson in figuring out just what we needed and found the problem a far greater one than the one that first confronted me when I started in to rehabilitate the old plant.

We had made many mistakes in our attempt to patch up the old place with new machinery, particularly in the arrangement of the plant and the location of the various machines. These mistakes, however, did not appear until after we had begun operation and they were too late to rectify.

"Mr. Cox, we cannot afford to make a blunder of even the smallest nature," Simpson warned me one morning as he, Sawyer and myself sat around a little table with paper and pencil and were busy planning the new outfit. "You've got to have an increased output and you should be able to make brick at a far cheaper price than you are now."

"Well, what do you suggest?" I asked, failing to suppress a slight smile, despite the fact that I had learned to depend a great deal on the young fellow's advice.

Simpson hesitated a moment before replying. I suppose he had seen the little smile that played around the corners of my eyes, but his hesitation was not for long.

"What I am to suggest," he said, "may not meet with your approval at first, because it means a further expenditure of money."

"Some new fangled machinery," growled Sawyer. "Better stick to the good old things, than to experiment with a lot of truck that never has been tried."

"It won't do us any harm to listen, anyway," I replied to Sawyer. "I want to say, however, that I am opposed to anything that isn't absolutely necessary, for my capital is limited and I've got to make every nickel count."

"That's just why I say we mustn't make any mistakes," interrupted Simpson. "It will be cheaper in the long run to do things right than to go off half-cocked and have to pay for the blunder later."

"Go ahead with your suggestion, Simpson."

"My suggestion is to employ some competent engineering expert before me make another move."

"All bosh!" snapped Sawyer. "We've don't need no engineer with his fancy ideas. They put on a lot of ginger-bread but ginger-bread ain't goin' to make brick, by a long shot."

"I am of the opinion that Sawyer is about right," I replied. "It does seem that we can lay out a plant like this without employing someone to tell us how."

"Of course we can," Sawyer hastened to add. "There ain't none of them fellows what has ever been in a brick plant more than long enough to come around and make a contract and return after awhile to collect their fee. I've spent nigh on to forty years in the brick business and I don't have to ask anybody where to locate a pug mill or how to build a shanty."

"That was all right in the days when you made 20,000 brick a day," said Simpson. A shed, two mules and a handcar were about all that was necessary to call it a plant: Mr. Cox, however, is building a modern plant that must compete with other modern plants and to do it he must conduct it modernly or he will come out of the small end of the hole."

The argument between the two was growing warm and, recollecting the previous little setto between these two I made haste to prevent actual hostilities by adjourning the morning session until afternoon.

Later I met Simpson and reopened the subject with him. I had subscribed for "Brick and Clay Record" and while waiting for my noon lunch hurriedly scanned through the reading and advertising sections. An editorial entitled, "Be sure you are right and then go ahead," attracted my attention and it had a direct bearing on the very thing we were discussing. The substance of the article was that it was safer to spend a few dollars now in building a plant right, than to spend several dollars later in rectifying a mistake, and it wound up with the advice that an expert engineer's service might mean the difference between a money-making plant and a money-losing plant.

That editorial got me to thinking and as I thumbed over the pages of the advertising section of the magazine I ran across the ads of several engineers.

"Simpson," I said, as I reopened the subject with him. "How much will it cost to have an engineer come out here and put us on the right road?"

"Haven't the least idea," he replied. "It won't cost anything to find out, at least."

I went over every phase of the proposed increased output with him and later in the day sent a letter of inquiry to each of the engineers whose ads appeared in the clay journal. That night I told Sawyer what I had done and that we would not take any further steps towards figuring on the equipment until I had heard from the men to whom I had written.

"Mr. Cox, you hired me as your superintendent, didn't you?" he replied stepping up close to me. I could see by the gleam in his eye that he was resenting the proposition and I made an attempt to check him before he said something he would regret as well as myself.

"I've got something to say," he said determinedly, "and I'm goin' to say it!" I saw I could not check him and I motioned him to go ahead and sat down resignedly.

"You hired me as your superintendent. You did that because you thought I was competent enough to run this here plant. Ain't that right?" He paused a moment for my answer. I nodded my head in approval. "Well, sir, it seems you have come to the point where you think I ain't competent no longer and I guess it's high time I was turning in my resignation. You can consider me quittin' tomorrow bein' as that's my week's end."

With that he started for the door. I got between him and the exit and holding up my hand held him back. He sought to push by me but I stood firm.

"Sawyer, you're making a blooming ass of yourself. Sit down there a moment."

The old fellow, with his characteristic bull-headed persistency, insisted on trying to leave the little shed room that was doing duty for my office.

"Wait a minute," I pleaded. "There is no occasion for this sort of talk. Come, tell me what's the trouble."

"There ain't no trouble. It's just a case where you are hiring someone to take my place and that's all there is to it."

"I haven't hired anyone for your job, Sawyer."

"This young upstart, Simpson, seems to be running things," he snapped.

"Your'e mistaken, there, Sawyer. I—"

"You take his advice on everything. I ain't blind. I can see."

"I admit I listen to his suggestions. I do the same thing for you, but I act in accordance with my own judgment. Come, there is no sense in quarreling over little trifles."

"You're gettin' an engineer expert to come out here and put up this here new plant, jest because that kid tells you its a good idee. I guess I know how to put up a plant seein' as how I have put up half a dozen and never had no kick comin' yet."

"I haven't employed an engineer—I am merely writing to some concerns to see what their proposition is."

"They're oil-tongued. They'll talk you into it and this kid you think so much of will help them sting you. Likely as not he's goin' to git a rakeoff."

"Sawyer, you're bilious. Go home and take a good purge and we'll talk matters over tomorrow."

The next morning Sawyer was back on the job but did not approach the subject again. For several days he was sullen and had nothing to say to anyone, answering whatever questions that were put to him in monosyllables. Knowing the man as I did I thought it best to leave him alone and cautioned Simpson to do likewise.

Before the week was over two or three of the engineers I had written to had come out to see me and the others had appointments to meet me later. The result of these visits opened up a new line of thought to me and I realized for the first time that my brick plant was little more than a shed and a clay bank.

I visited several of the more modern plants throughout Ohio the next few days and also made a special trip in company with one of the engineers—DeJones— to Iowa to see a plant in which he seemed to take special pride.

The more I traveled around the more I saw and the more confused I became as to my plans. I spent two weeks of very valuable time in these investigating trips and in consulting with the engineers and listening to their propositions. On two of these trips I took Sawyer along with me. At one place—the Iowa plant—Sawyer manifested the first real interest. We had spent the forenoon at the plant and I left Sawyer at the hotel while I went out to see a personal acquaintance that afternoon, expecting to meet him at the train later.

I got back sooner than I had planned and went to the hotel. Sawyer was nowhere to be seen and I inquired of the clerk and found that Sawyer had remained in the office but a few minutes after I left. I recalled Sawyer's special interest in the new conveyor system installed in the plant we had visited that morning and felt at the time he was more interested than he had allowed himself to show. It was nearly two hours before train time and I took a long chance getting on the street car that led almost to the door of the Iowa Clay Company's place. I had not missed my guess. Sawyer was there and so wrapped up in his second visit he did not notice me at first.

The superintendent of the plant, who was acting as Sawyer's guide was the first to see me and greeted me with a cheery "hello." Sawyer turned suddenly and blushed. I covered up his confusion with a few commonplace remarks and accompanied him in the rest of his trip around the plant.

That evening on the train Sawyer, who had remained silent most of the way and avoided the subject of the day's experiences, suddenly turned to me.

"Mr. Cox, I've got an apology to offer you. I never knew what these new fangled idees meant until today. I guess that kid was right—you do need an engineer."

(The Continuation of this Story will be Found in the Sept. 15 issue.)

Express Companies Must Publish Tariffs

INTERSTATE COMMERCE COMMISSION RULES THAT BLOCK OR ZONE SYSTEM MUST BE ADOPTED

A decision of great interest and ultimate profit to every manufacturer of clay products was recently made by the Interstate Commerce Commission, which lays the following requirements upon the express companies:

The adoption and observance, for two years, of a schedule of rates applying between all points in the United States, this schedule being the one which was submitted to the carriers by the commission on June 8, 1912.

The adoption of the block system of stating rates, similar to the zone system adopted by the United States Post Office Department.

The establishment of a uniform classification *and the publication of a joint directory of express stations,* fixing the location of each station by block number, and also the publication of the "pick-up and delivery limits" of each station.

The adoption of revised rules and regulations and of a new and more equitable form of express receipt.

Under the present method of compiling tariffs, some *nine hundred million* separate rates are published by the express companies. Under the block system prescribed by the commission, this number is reduced to less than 650,000 rates. The representatives of the carriers having agreed that the block system is practicable, the commission considers that its simplicity and intelligibility will afford the means for a satisfactory publication of express rates.

It also orders that as between any two points, rates shall be the same in both directions and shall be the same whether one or more companies participate in the haul.

This means that the man with goods to ship by express will be assured of these things:

That the rate he pays is no higher than that paid by any competitor shipping the same distance.

That, without calling up on the 'phone, each time he wants to ship a parcel, he will be able to tell if express or parcel post is the cheaper.

That he may know in advance, what the expressage will be, not only on goods that he is about to ship, but which he may want shipped him, the rate from that town to his being the same as the rate from his town to the point from which his shipment is to be made.

That if the product of his plant is such as to make it more favorable to the carrier than other commodities that make up the greater part of the goods listed in the same classification (as, for instance, sample bricks, 20 lbs. of which can be shipped in a cardboard box 8 in. by 9 in. by 5 in. high) he has a basis for complaint, to be made to the Interstate Commerce Commission, which may result in his securing a rate more nearly in accordance with the ease of handling and non-liability to damage or loss, than is the present rate.

With the express companies coming out into the light, the rates subject to public scanning, the classifications open to every shipper—not in the stuffy express office, but on the shipper's own desk—and the ever increasing competition of Uncle Sam, with his thrice blessed parcel post, the shipper who requires and is willing to pay for quick delivery—but not to the extent of being robbed—may yet come into his own.

The Vale Brick Company, of Vale, Mo., expects to have its new plant ready for operation early in the winter. The ultimate capacity will be 100,000 common brick per day, it being the intention of the company to run on builders until the shale bank is well uncovered, and then to begin making vitrified shale facing brick. It will install a continuous kiln with complete electrical conveying systems, having closed contracts for the greater part of the machinery required. The officers are George C. Stephens, president; Charles P. Bryant, vice-president; George V. Lewis, secretary-treasurer, and K. W. Klose, manager.

The Superintendent

A DEPARTMENT CONDUCTED FOR THE INTERCHANGE OF IDEAS IN METHODS OF MANUFACTURE

Contributions from our readers are solicited for this department on any subject pertaining to the manufacturing end of the industry. Short cuts and labor-saving suggestions are particularly sought. Address all communications to the Editor of the Superintendent Department. Brick and Clay Record, Chicago.

Bulletin No. 48*, United States Bureau of Mines, deals with the characteristic features of the principal explosives used in engineering and mining operations, and especially with the tests that show the suitability of different classes of explosives for various kinds of work. This Bulletin is called "The Selection of Explosives Used in Engineering and Mining Operations" and is written by Clarence Hall and Spencer P. Howell. It is published as one of a series of Bulletins dealing with tests of explosives and methods of reducing the risks involved in their use.

In all engineering projects and, particularly in the shale bank requiring the use of explosives, the selection of a suitable explosive from the many varieties offered for sale is of fundamental importance. The various considerations involved in the selection of the proper class of explosive for the blasting to be done are given.

Many explosives suitable for shale banks have been proven unsuitable for use in deep mines or in close workings. In metal mining and in driving tunnels the character of the gases evolved by the explosive on detonation is an important consideration. An explosive for use in gaseous or dusty coal mines must be formulated and compounded so that its flame temperature and the height and duration of its flame are reduced enough to permit its being used with comparative safety. In wet workings, such as clay or shale pits, or in submarine blasting, explosives impervious to moisture are requisite.

In extremely cold climates explosives that do not require thawing are desirable, provided they are equally good in other respects. An essential requirement of all explosives, especially of those for use in tropical countries, is that they shall remain stable without change in chemical or physical characteristics.

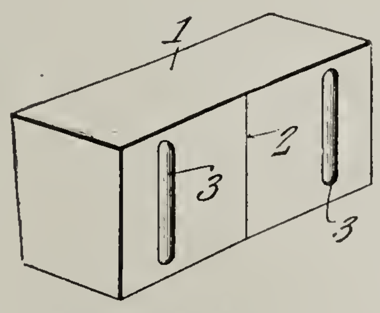
Because of the varying conditions in the different projects on which explosives are used, the fact is emphasized that some characteristics of explosives are of much importance in certain classes of work and of little or no importance in others. As practically every class and every grade of commercial explosive is used in open air work to meet varying conditions, the authors indicate the method of manufacture, give typical composition of, and state the use to which each of the following explosives is best adapted: black blasting powder, granulated nitroglycerin powder, "straight" nitroglycerin dynamite, low-freezing dynamite, ammonia dynamite, and gelatin dynamite.

Black blasting powder is stated to be best suited for work in which a gradual pushing or heaving effect is desired, such as is necessary in the clay product industry, and in order to obtain the maximum efficiency the charge must be well confined by suitable stemming. Granulated nitroglycerin powder is more effective and gives better results than black blasting powder in soft and seamy rock or in material that does not sufficiently confine the gases evolved. "Straight" nitroglycerin dynamites, as a class, develop greater disruptive force than any of the other commercial classes of explosives tested, and for this reason they should be used for producing shattering effects or for blasting very tough or hard materials whenever the conditions permit. If the "straight" nitroglycerin dynamites are found to be too violent for certain classes of work, the low-freezing dynamites or the ammonia dynamites, which have lower rates of detonation and hence less disruptive effect, are recommended.

The low-freezing dynamites have the advantage of not freezing until exposed to a temperature of 35° F. or less, but, like all nitroglycerin explosives, after they become frozen they must be thawed before use in order to insure the most effective results. As the ammonium nitrate used in ammonia dynamite is deliquescent, this class of explosive absorbs moisture more readily than other dynamites, therefore it is emphasized that care should be observed when storing this class of explosives in wet or damp places. The gelatin dynamites have been used to a large extent in wet blasting, such as in extra wet clay pits and, as a general rule, they are best suited for this purpose.

The authors describe the method of blasting followed at Lock No. 1, Monongahela river, as an example of submarine operations, giving the difficulties encountered, showing the causes of misfires, and the methods used for overcoming these difficulties. The tests incident thereto showed that variation in the cross-sectional area of the bridge of an electric detonator was an important factor in its failure to explode when in series with other electric detonators.

The bulletin closes with a table showing the relative potential energy, disruptive effect which bears a close relation to the percussive or shattering force of explosives, and propulsive effect which corresponds to the pushing or heaving force of nine explosives of different classes and grades.



Key and Lock Brick

A patent has been granted Samuel S. Swift, of Woodland, Pa., upon a so-called key-and-lock brick, application for which was filed Oct. 6, 1909, the serial number being 521,266. The patent number is 998,811. Described briefly, it consists of a structure of parallel courses of similar brick, each course consisting of brick placed end to end, each brick having flat parallel ends perpendicular to the longitudinal axis of the brick and having parallel flat upper and lower faces, each side of the brick being made up of flat faces converging inwardly to a single line located midway between the ends of the brick, being key-stone shaped in cross section, one course being inverted relative to the brick of the adjoining courses.

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* This Bulletin can be obtained without charge, by application made to the U. S. Bureau of Mines, Washington, D. C.

Questions and Answers

A DEPARTMENT FOR THE SOLUTION OF THE KNOTTY PROBLEMS CONFRONTING THE CLAY WORKER

This department was inaugurated to be of material benefit to the readers of "Brick and Clay Record" and no charge is made for the service given. The advice of the world's recognized authorities in ceramics is offered to clayworkers who are invited to avail themselves of the opportunity to have their problems solved here. Should a reply be desired by letter enclose a stamped and addressed envelope for reply.

Farm Tiling in Quicksand.

187. *Illinois—I write for information as to farm tiling in quicksand. How should it be done—should cinders be used? I know that sometimes straw is used to keep the sand out of the tile, but what happens when the straw rots?*

R. K. Hursh, of the Ceramics Department of the University of Illinois, states that in laying tile in quicksand, he would suggest that the best plan would be to lay the tile only up to the sand at first, and to allow as much of the water as is possible, to drain out, then laying the tile in the sand for a short distance, and more water drained, this being repeated until the tile are finally all laid. While it may prove a costly way of laying, it will be safer than any other way that could be suggested and the tile will be much more likely to remain in place and not fill up with sand.

As a precaution, a sack should be left in the drain just below the sand so that it may be pulled through the tile later and so clean out the sand that has been carried into the line. This will prevent the clogging up of the drain by the sand, and leave a good clear drain when completed.

As to the relative merit of straw and cinders in such a case, no definite information is available. They would probably be equally effective in holding back the sand when the tile were first laid, but neither would prevent the sand from at least partially filling up the drain.

It would be well to write to the Agricultural Department of the University of Illinois (Urbana, Ill.) or to the Department of Farm Mechanics.

Wants Fire Clay Tested.

186. *Georgia—We have some fire clay that we would like tested, and if you would refer us to some one who can make the proper test we will be obliged. Would you advise sending the clay or a burned brick?*

The University of Illinois, at Urbana, Ill., the New York State School of Clayworking and Ceramics, at Alfred, N. Y., the Ceramic Department of the Ohio State University, at Columbus, Ohio, and the Department of Clayworking and Ceramics of Rutgers University, at New Brunswick, N. J., are all equipped to give you accurate and reliable tests on fire clay. We would advise your sending samples of the raw clay, as well as of the burned brick.

Proper Size of Down Draft Kilns.

167. *Tennessee.—We would be pleased to have opinions as to the most successful and economical size of round down-draft kilns for burning fire clay. Is a kiln of 30 ft. inside diameter as good as one of 26 ft.?*

Anton Vogt, Consulting Engineer, answers the above questions as follows:

Years ago sewer pipe manufacturers built their kilns 20 to 24 ft. in diameter, then 26 to 28 and 30 ft. In recent years they have been building them 32, 34, 36 and 40 ft. diameter. A 40 ft. is the limit for the reason that if built larger it would necessitate going higher with the crown, and that would not be practical, as it gives too much space above the ware and if crown were not built according to the size of the kiln, it naturally would be too flat, the result of which would be that it would not last long.

Covering the question of economy of kilns, the large kilns are more economical as to capacity and fuel consumption, provided that the bottom of kiln is of such construction that the heat is distributed to all parts of the kiln, uniformly, to the center and door ways, as well as to the sides.

As to capacity, take for instance, that a 26 ft. kiln has an area of 530.93 square feet; a 36 ft. kiln has approximately twice as much area, or 1,017.9 square feet, consequently, double the capacity of a 26 ft. kiln.

In proportion to capacity the larger kilns are cheaper to build than the smaller ones, and the fuel consumption in proportion is less. For kilns where ware at high temperature, such as fire brick and also flashed brick are burned, the 28 to 30 ft. size is recommended, especially for sewer pipe, tile, fireproofing and other hollow ware, as well as for common brick, this size being the most economical. For paving brick and face brick the smaller size gives better results.

Fighting Cement Drain Tile.

174. *Kentucky.—We are meeting with the concrete drain tile competition and need your assistance to help us fight it. If you can tell us of any literature that we can use for this purpose it will aid us greatly.*

"Brick & Clay Record" has sent this correspondent a copy of an illustrated Bulletin, "The Life of Portland Cement," dealing with this subject, and has quoted on single copies (5c) and on larger quantities, at the following rates: Lots of 100, $4.00; Lots of 500, $17.50; Lots of 1,000, $30.00. These Bulletins, distributed among prospective users of drain tile, will do much to offset the literature distributed by the cement interests.

Wants to Change the Color of Brick.

179. *Illinois—We understand that there is a material on the market that can be used in shale or clay, for the purpose of changing the color of the brick from a dark red to black. Can you tell us where we can get any information on the subject?*

Mr. Ellis Lovejoy states, in answer to this correspondent, that he does not know of any material that will answer the purpose. Gunmetals and other dark effects in building bricks are obtained by reducing kiln conditions at high temperatures. The more iron in the clay the blacker the color will be, and it would be possible to add a powdered iron oxide to produce a black effect under reducing kiln conditions. Manganese also can be used in the same way and will produce a dark color to black depending upon the amount used and the degree of burning. These minerals do not change the color of the brick, but in themselves are black or form black compounds in burning and thus mantle the red color of the naturally red brick. Manganese added to a red brick produces a brown and the more that is added the darker the brown, until finally the color may be called black.

"We Are Having Trouble With Our Dryer."

105. *Ontario.—We have installed a new dryer and it is not giving very good satisfaction. It is a tunnel, six racks, holding sixteen cars each of sand struck brick, six pallettes and twelve high. It is heated by 10,000 ft. of one inch coils and a sixty inch fan. We circulate the air two thirds up the tunnels and run the fan 100 rev. per min.—have 160 degrees in the hot end and 80 degrees in the receiving end. We sand the face of the brick so they will keep on the pallettes, still they break badly in drying. Some will be broken in the center and the ends will be good. There is from five to ten pallettes fully spoiled on each car. There is no special place for them to break, but mostly from two to three rows from the bottom of the car. The brick at the cool end sweat a lot and cars are quite wet. The brick appears to break shortly after it is placed in the dryer. There is very little draught there, either. We give them about 80 hours to dry and sometimes we have dried them good on the open rack and pallettes in 48 hours, and have dried over the boiler in 24 hours, and safely, too. Our clay is quite strong, but not too strong for a good red brick.*

Your dryer trouble is a tough one and one which can not be diagnosed in a letter with any degree of certainty. You have installed the wrong kind of dryer for your clay, as it is very apparent that your material is not adapted to forced circulation of air,—for in the dryer which you describe, circulation is necessary to carry the heat to the bricks. Would suggest that you have your clay looked into by some expert on drying. Ground coke or cinders would make your clay more porous and could be ground in the dry pan, if you have one.

Wants Information About Brick Machinery.

159. *Illinois.—Can you give us any information concerning what books are published descriptive of brickmaking machinery, methods and material, also what statistical books there are printed concerning the production of different classes of brick in the United States, and dealing in general with the economical side of the business?*

The most up-to-date and reliable books on brickmaking machinery are the catalogues of the various manufacturers who make a specialty of clayworking equipment. The literature that these firms distribute give full descriptions of the various methods of making brick by machinery and recommend different processes, according to the character of the material that is to be used and that is to be produced. A letter addressed to the Director of the U. S. Geological Survey, at Washington, D. C., will bring you the information you require relative to brick.

Wants Book on Silica Brick.

181. *Pennsylvania—We would appreciate any information you can give us on the manufacture of silica brick and clay fire brick.*

One of the best books on this subject, that has so far come to our notice, is "Refractories and Furnaces" by F. T. Harvard, E. M., associate professor of metallurgy at the University of Wisconsin, and can be obtained through the "Brick and Clay Record" Clayworkers' Library. Valuable information is also contained in Bulletin No. 7 of the Bureau of Standards, Department of Commerce and Labor, Washington, D. C., and Bulletin No. 18, of the Illinois State Geological Survey (Frank W. DeWolf, Director, Urbana, Ill.).

Vol. XIV, Trans. Am. Cer. Soc., also has several valuable papers on the subject, one of which is reprinted in this issue of "Brick and Clay Record."

Wants Information About Kaolin.

189. *Missouri—I have a deposit of kaolin, consisting of about 65 per cent silica, 21 per cent alumina, 9 per cent water, and the rest undetermined. Will you inform me if this clay is extensively mined, and where, also, if possible, what prices are obtained for it and for what it is used?*

The value of your kaolin depends largely upon the "undetermined" content, which, according to your statement, is five per cent of the components. The most practical way of determining what it is worth is to send a sample to one of the engineering firms that make a specialty of analyzing clays (see the advertising pages of this journal) and giving them a full description of the extent of the property, its location and the depth of the deposit. Write to the U. S. Geological Survey, Washington, D. C., for their latest bulletin on kaolin production in the United States. Kaolin is used extensively in the manufacture of pottery.

Wants Plans of Prize Bungalow.

188. *Ohio—I would like to get a set of drawings and specifications covering the 1913 bungalow shown in your issue of July 1. If you can arrange to supply these to me, I will appreciate it, or should you prefer to have me get into communication with the architect direct, let me know his address.*

A letter addressed to Walter Burley Griffin, 104 South Michigan Avenue, Chicago, Ill., will bring the desired information.

Wants Plans of Low Priced Hollow Block House.

182. *California—Referring to the article "Hollow Block" in your August 1 issue, we would like the address of the architect or someone who can give additional information as to the manner of construction of the house described.*

"Brick and Clay Record" has made arrangements to secure this information and will publish it at an early date.

Wants Addresses of European Fire Brick Plants.

180. *Pennsylvania—Can you give the names and addresses of a few of the leading firms manufacturing furnace fire brick in Europe, particularly in England and Germany.*

Application has been made to the proper government official, who will, through consular agents, secure this information for our correspondent.

Wants Books on Sand-Lime Brick.

185. *Ontario—Please forward to our address the titles of any publications that may be in your files that deal with the manufacture of sand-lime brick.*

Bulletin No. 18, of the Illinois State Geological Survey (F. W. DeWolf, Director, Urbana, Ill.), is called "A Study of Sand-Lime Brick" and contains a fund of valuable information regarding the composition and manufacture of this kind of brick. It also contains a list of 61 books and papers that deal with the subject, many being in foreign languages.

Information Wanted.

Dr. L. S. Trusler, of Oakland City, Ind., wants information regarding clay gathering machinery, kilns and kiln bands, etc., pyrometers and aerial tramways.

New Methods and Processes

A DEPARTMENT OF TECHNOLOGY
WHEREIN RECENT EXPERIMENTS
AND DISCOVERIES ARE EXPLOITED

Edited by

Charles S. Kinnison

Ceramic Chemist, United States Bureau of Standards, Department of Ceramics

Contributing Editors : Prof. Charles F. Binns, Ellis Lovejoy, C. E., Anton Vogt, C. E.

The Manufacture of Refractory Muffles

Refractory muffles, being very widely used in the industries and in the research laboratory, are of many different shapes and sizes. It is impossible to give the composition that the material entering into their manufacture should have, since each use requires its own special material. But whatever the composition, the material should have good mechanical strength and be able to withstand sudden changes of temperature.

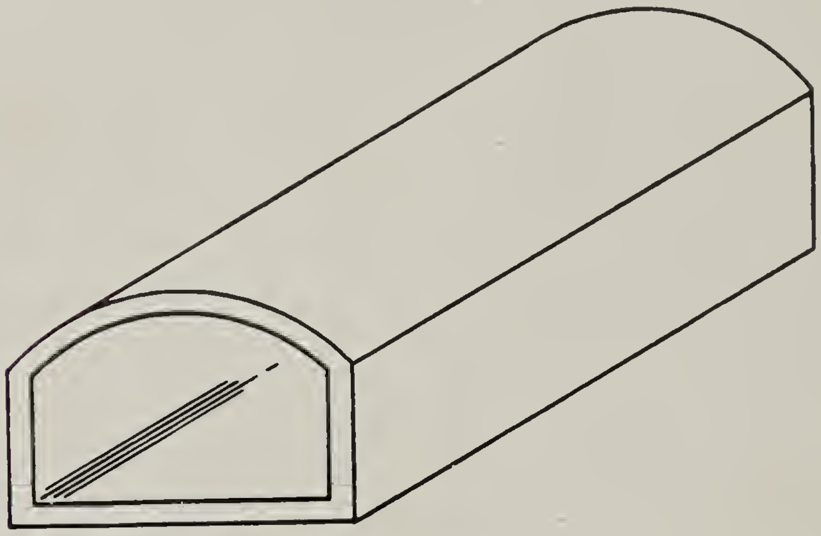

FIG. 1.

Practically all muffles are made by hand, the general procedure being to shape the material around a wooden form, whose dimensions are such as to give the desired size to the inside of the finished muffle.

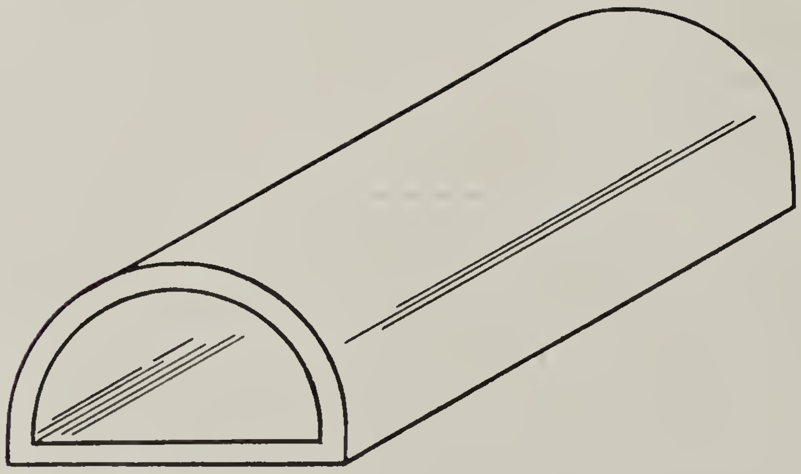

FIG. 2

The first step is to "bat out" the stiff plastic material into a sheet of the desired thickness. This is done by forcibly throwing the material down between two wooden strips and roughly leveling it down to the surface. The excessive material is now removed by drawing a fine wire along these strips, which serve the double purpose of giving the desired thickness of material and also guiding the cutting wire.

After the material has become leather hard, the piece to be used in the bottom is first laid out and on this the wooden form is placed. The end and side walls are then put in place and the pieces all carefully welded and wedged together, and the top of the muffle put on last. The outer surface is then neatly smoothed down to the desired finish. The wooden form having previously been well oiled or soaped, can now be readily removed, after punching a small nail hole in the rear wall to admit air. The inside of the muffle is now dressed down and the joints of the walls carefully welded from the inside.

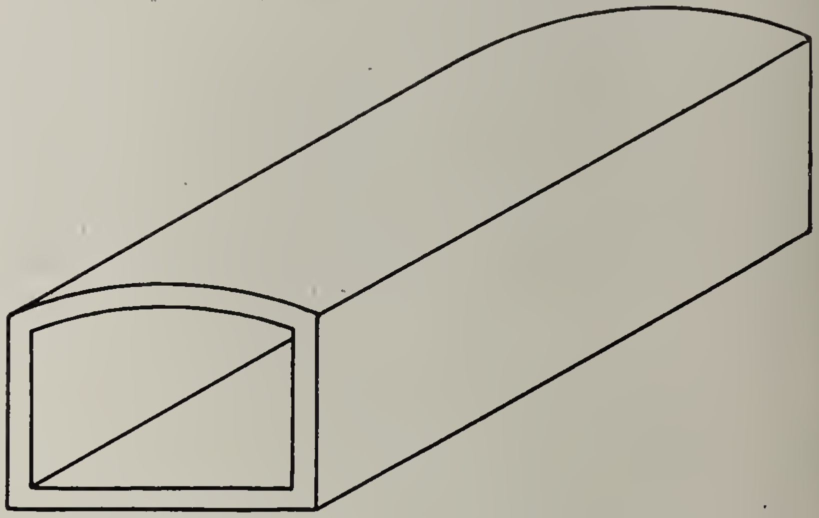

FIG. 3

In drying, care should be taken to protect the ware from air drafts and to dry slowly and uniformly.

The above method of manufacture applies only to smaller muffles made entire in one piece as shown in Figures 1-4. In the manufacture of muffles whose length is much more than 3 inches, another method must be

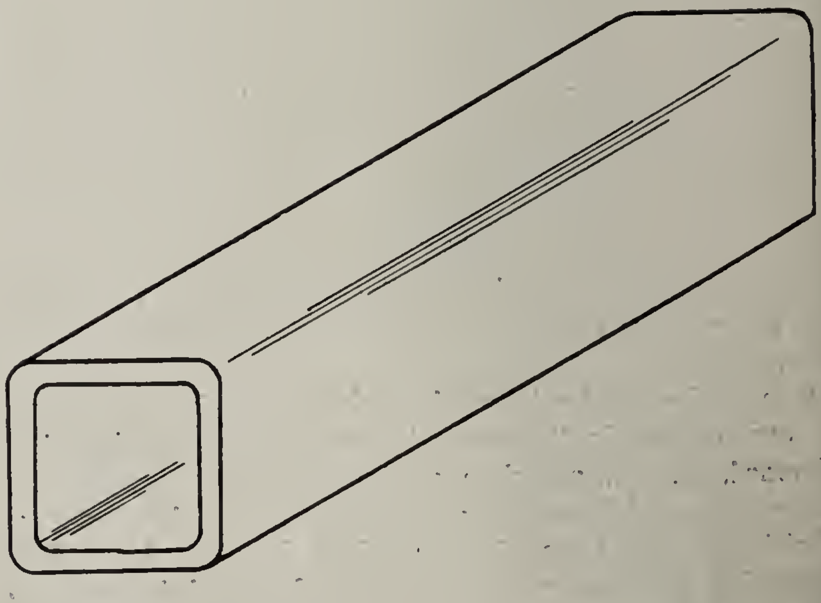

FIG. 4.

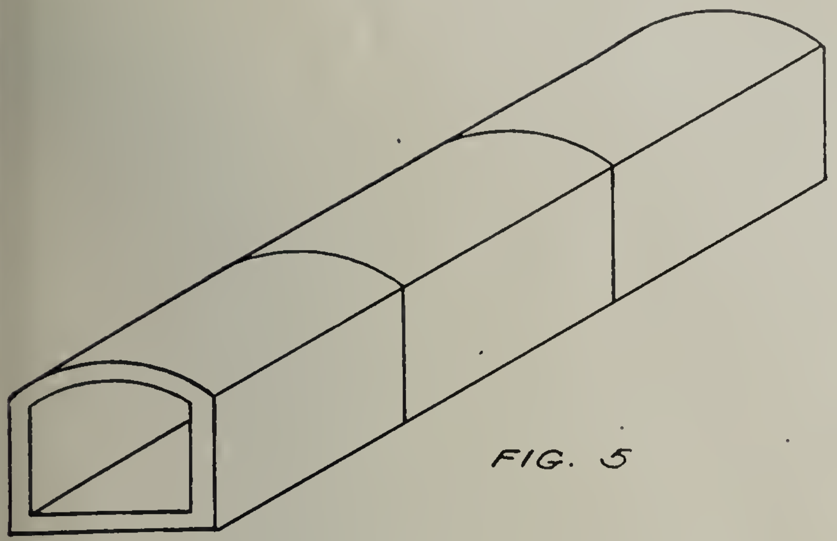

FIG. 5

used, the length being limited, of course, by that of the workman's arm.

It is advantageous to make the larger sized muffles out of individual units which fit into one another as shown in Figs. 5-6. This method has the advantage that when a possible crack appears, after continued use, the muffle is not rendered useless, since only the damaged units need be replaced.

Fig. 6 illustrates a method used in the manufacture of exceptionally large sized muffles, a tongue and groove feature being adopted.

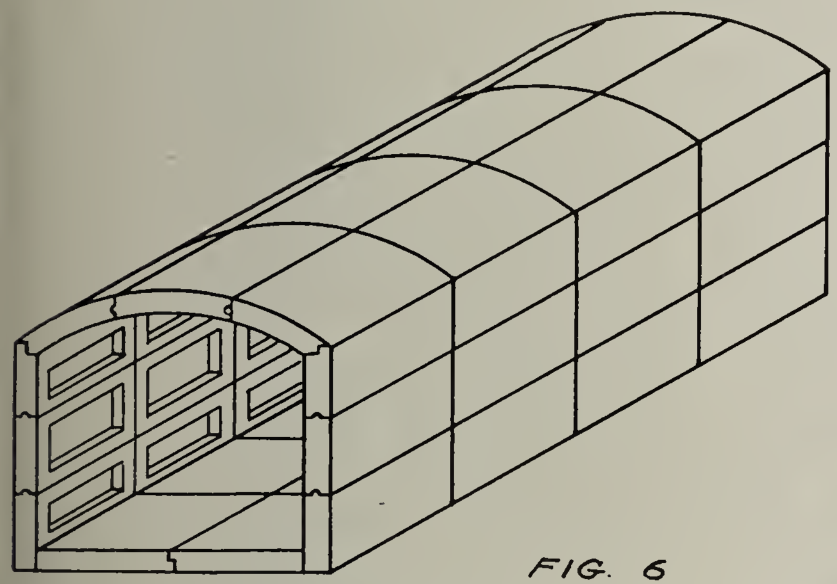

FIG. 6

In burning this class of ware, care, of course, must be taken not to set them too deep and, furthermore, they should always be set on end, with the opening upward. The kiln should be heated and cooled slowly to insure ware free from cracks.

Obviously, in shipping ware of this sort, they should never be placed loosely in the car, but rather shipped in crates, the smaller ones being telescoped in those larger and tightly packed with straw.*

---

*(Keramische Rundshau.)

Load Tests Made on Magnesite, Chrome and Silica Brick

The results of load tests, made by G. H. Brown, on magnesite, chrome and silica brick, and published by permission of the director of the Bureau of Standards in Vol. XIV, Trans. Am. Cer. Soc., will prove of interest to manufacturers and users of refractory brick, and comparisons made with similar tests on clay fire brick should prove of value.

Although magnesite brick are designed mainly to withstand the corrosive action of molten slags and metals such as are encountered in the basic open hearth furnace, cases have

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arisen where brick of this type have been used mainly on account of the fact that their refractoriness is superior to that of clay brick.

One from a lot of magnesite brick purchased on the market was placed in the testing furnace on end and a load of 50 pounds per square inch applied. The rate of temperature increase to 1350° C. was the same as that used in testing clay fire brick, the temperature being held, however, at 1350° for one half hour and then increased at the same rate. At 1550° C. the lever of the furnace dropped suddenly without warning and without previous visible contraction of the brick as far as could be observed from the spirit level in place on the beam.

Upon examination the brick was found to have sheared diagonally into two parts, the break being similar to that we would expect on testing cold in a compression machine. There was no bending of the brick in evidence. The only appearance of softening was at the edge of the brick which struck the bearing block of the furnace when failure took place. This edge had been flattened and bore the imprint of the depression of the bearing block.

The failure was very dissimilar to those secured on fire brick made from clay.

Whether the failure could be accounted for by the softening of the bonding material or whether it was due to a molecular change which weakened the structure, we have not decided. The suddenness of the failure and the character of the fracture inclines towards the latter theory, however.

The published analysis of the material from which these bricks are manufactured is as follows:

SiO_2	2.84
Al_2O_3	0.929
Fe_2O_3	8.571
CaO	1.120
MgO	85.32
CO_2	0.50

One from a lot of chrome or so-called neutral brick was subjected to a test similar to that given the magnesite brick. The furnace was held at 1350° C. for one-half hour and the temperature gradually increased from that point. The behavior of the brick during the test was very similar to that of the magnesite brick, failure, however, taking place suddenly at 1450° C. There was no previous indication of contraction. Upon examination the brick was found to have sheared diagonally into two parts. There was no bending or evidence of softening.

The published analysis of chromite or chrome ore, from which similar brick are manufactured, shows the following:

Cr_2O_3	38.0 —40%
Al_2O_3	24.5 —40%
Fe_2O_3	17.5 —40%
SiO_2	3.25—40%
MgO	15.0 —40%

As in the case of the magnesite brick the failure was unlike that secured on clay fire brick and has been unaccounted for.

In making the preliminary load tests on fire brick it was first thought that the transverse test would be most suitable. Samples of fire brick were supported at the ends and a load applied at the center of the flat side of the brick. At temperatures above 900° C. and below 1150° C. the brick would suddenly fail without appreciable deformation or previous warning. The failures were thought to be due to the volume changes in the brick. In testing fire clay brick more or less expansion is noted between the above temperatures, although in testing on end failure has never resulted from this cause.

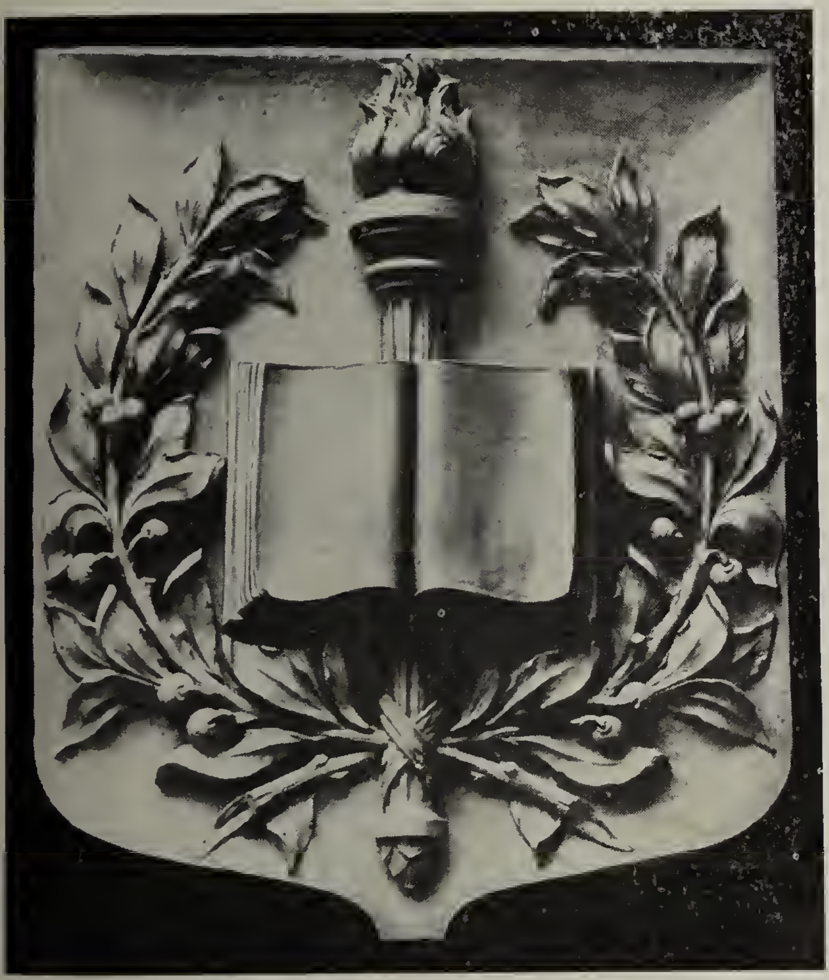
Perhaps pronounced volume changes occurring in the magnesite and chrome bricks at the higher temperatures would account for their failure.

Upon subjecting a sample of silica brick to a load of 50 pounds per square inch on end and holding at a temperature of 1350° C. for one hour no contraction resulted. After cooling the furnace down rapidly, however, the silica brick was found to be badly cracked. Under the same cooling treatment cracking was never observed to any clay brick tested. In another test on silica brick, it was subjected to a temperature of 1470° C. under a load and was not affected.

The silica brick tested were of the variety manufactured from crushed quartzite, using lime as a binder.

Silica brick in which clay has been used as a binder show a small deflection under a load at 1350° C.

Architectural Terra Cotta



The terra-cotta ornament shown above is one of several made for public school work in New York city, by the Brick, Terra-Cotta and Tile Company, of Corning, N. Y. It matches Indiana limestone in color and texture and is a reproduction of the seal of the Board of Education, City of New York.

"Brick and Clay Record" had a very pleasant caller, one hot day last month, in J. M. Mamer, president of the Illinois Clay Products Association and owner of a brick and tile plant at Campus, Ill. He was on his way home, from a visit to his plant at Benton Harbor, Mich., where he makes common brick, catering to the local trade of St. Joe and Benton Harbor. Mr. Mamer is one of the up-and-doing men of the Middle West and is well fitted to the eminence to which his fellow clayworkers in Illinois have elected him.

Purchase has been made by the American Encaustic Tiling Company, of Zanesville, Ohio, of the plant of the Perth Amboy Encaustic Tiling Company at Maurer, N. J., and will operate it in conjunction with the works and business at Zanesville. Possession is to be secured at once.

The Enfield (Pa.) Pottery & Tile Company has just been incorporated with a capital stock of $30,000.

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Paving Brick

Demand for paving brick and blocks is steadily increasing and manufacturers of "the best road building material" are enjoying an era of prosperity second to no year previously reported. So far as the Eastern states are concerned, the plants were never so busy before, as they are this season. The volume of orders now on file is sufficient to keep every plant actively engaged until the closed season arrives.

So far as Pennsylvania is concerned, the eyes of all other states are turned thereto on account of the $50,000,000 road bond election, which is scheduled for the first part of November. This election is attracting attention in all parts of the state, and to top it all off with, the State Grange has gone on record for the use of brick to the exclusion of all other materials in the building of all new roads in the Keystone State.

At Harrisburg, Pa., a few weeks ago, a Good Roads association was formed, and "Farmer" Creasy, a member of the State Legislature, came out strong for brick in all new road construction.

"We have a macadam road in our section of the state that was put down two years ago, and we have already spent almost the original cost of the road for repairs," was one statement made at this Harrisburg meeting.

"Come up into northwestern Pennsylvania, and see a brick road that we have, a road that extends through to Cleveland, and on which we have not spent a cent for repairs," was another statement made a few moments later.

Automobile Associations throughout the state have come out strong for the brick road, and it is generally believed that should the Fifty Million Dollar Bond issue carry, the bulk will be spent for brick roads.

No. 1 block is selling as low as $14.50 at the works this season, the range being up to $17 per M. Paving brick is firm at $10 per M., although some rush business has been sold at a little higher price than this. These prices also maintain in the West Virginia and Ohio river districts.

When the Federal Statistics are recorded for the present year, the totals will show that more paving brick and blocks were manufactured in the United States this year than ever before. The year will be one in which all previous records are broken, all old Ohio plants exceeding their earlier outputs, and new plants being placed in operation at many points in the state.

It takes really hot weather to show up one of the failings of asphalt pavement. On Michigan Avenue, in Chicago, the automobiles have made ruts three inches deep, and a ride down Chicago's fashionable drive is not without excitement. What a difference there would be, were the pavement brick!

PIONEER BRICKMAKER DEAD.

John B. Legnard, Formerly Chicago Partner of Congressman Martin B. Madden, Dies in Waukegan.

John B. Legnard, a pioneer brick maker of Chicago, died Aug. 10 at 729 North Genesee street, Waukegan, Ill. He was born in Burlington, Vt., in 1835. Left an orphan when he was 12 years old, he went to California and later to Australia. On his return to America he "freighted" gold seekers across the plains, making seventeen trips. He established his first brickyard at Thirty-fifth and Ullman streets, Chicago, later moving to Thirty-ninth street and Ashland Avenue, and then to Forty-fifth and Robey streets. In 1891 he organized the Legnard-Madden Brick Company with Martin B. Madden, now congressman. Funeral services were held from the Waukegan residence Aug. 12.

Common Brick

"Brick and Clay Record" is in receipt of the following letter from Mr. John Andres, secretary of the Standard Brick Manufacturing Company, of Evansville, Ind.:

"Referring to the article in first paragraph under the heading 'Common Brick,' on page 292 in your issue of Aug 1, permit us to inform you that the report in the newspaper from which this information was taken was greatly exaggerated.

"There have been less than 1,000,000 common brick shipped into Evansville and this would not have happened if the flood and high water had not put our plants out of commission for four weeks.

"At the present time all contractors in the city are being supplied from our local yards and this, even without the help of our new plant, which will begin operations the latter part of this week, doubling our present capacity.

"The price of common brick, kiln run, delivered by wagon at the building site will average about $6.25 per M. in Evansville. Several of the neighboring cities are ready to ship in good hard burned brick at $6.50 per M. f. o. b. cars Evansville and it is a positive fact that any one who was willing to pay this price did not have to wait on brick."

We publish this letter in full, in order that we may correct the impression that was given in the article alluded to, which spoke of Evansville as a most promising field for the starting of a new brick plant. Accompanying Mr. Andre's letter is a clipping from the Evansville (Ind.) "Journal-News," giving a description of the Standard Brick Manufacturing Company's equipment, which gives an idea of the production of its yard, and we publish that, also, as it should prove of interest to other manufacturers. It reads as follows:

The Standard Brick Company abandoned their plant at Washington and Kentucky avenue last fall as the clay bed was exhausted and arrangements were made immediately and contracts signed for machinery and equipment to more than double the capacity of their West Side plant. For various reasons the machine manufacturers were unable to make delivery of much of the necessary apparatus until within the last few weeks.

So far the brick company has been making only 70,000 brick per day this year as compared to 100,000 per day during 1912. This reduction, together with the fact that operations were suspended for four weeks during the high water accounts for the fact that a few brick are being shipped into the local market to help care for the unusual building activities.

Most of the new machinery is now here, the ninth carload being unloaded last week, yet there is more on the way. When complete the West Side plant will be one of the best equipped in the country for making a high-grade impervious building brick, with a daily capacity of 115,000 brick, which is more than the combined capacity of the three plants formerly operated by the Standard Company.

All of the new machinery will be driven by electricity, three immense motors being installed and ready for the current, these being the largest motors in the city next to the street railway company's.

The great brick machine, pug mill, automatic cutting table, two 12-foot fans to force hot air through the dryer, 228 steel brick cars, three electric motors, crushers, elevators and conveyors are now in place and everything has been arranged with the view of expanding and increasing the equipment whenever the demand for brick will justify it.

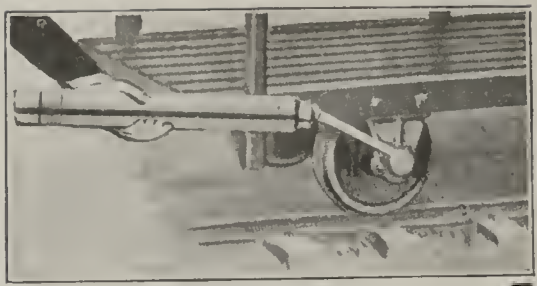
The material used is a hard soapstone shale, of which there is an inexhaustible supply on the company's property adjoining the plant. This is first blasted loose with dynamite then loaded by a big force of men into cars and hoisted by wire cable to the grinding room and fed into large crushers. A steam shovel will soon be installed to do the loading.

PURINGTON PAVERS
ARE MADE OF
GALESBURG SHALE
The Purington Paving Brick Co.
GALESBURG, ILL.

Sterling Brick Company
OLEAN, N. Y.
Manufacturers
OLEAN BLOCK
Dunn-Wire-Cut-Lug
Made from shale
VITRIFIED
Many are not as good,
A few may be as good,
None Are Better

Marion Brick Works
MONTEZUMA, IND.
MARION PAVERS
A Strictly High Class Paving Block
Also: Fancy Face Building Brick, Colonials, Antiques, Etc.

PATERSON
CLEARFIELD, PA.
Vitrified Shale Paving Blocks, Fire Clay Paving Blocks, Dunn Wire-Cut-Lug Blocks.
Paterson Clay Products Co.
Clearfield, Pennsylvania



Use Toco
"Kiln Car"
Grease and
Save *Time,*
***Money* and**
Trouble

"The Better Way"

Toco "Kiln Car" Grease will not melt or run off the journals of rack cars when used in the intense heat of dry kilns. Applied with special grease gun, which we furnish with barrel or half-barrel orders.

Write for prices.

THE TROPICAL OIL CO.
CLEVELAND, O.

PAVING **SIDEWALK**
BUILDING **FOUNDATION**

BRICK AND BLOCK

The Barr Clay Co.
C. C. BARR, Pres.
STREATOR, ILL.

Terre Haute Vitrified Brick Co.
MANUFACTURERS OF
High Grade Vitrified
PAVERS
Samples Free
Address **TERRE HAUTE VITRIFIED BRICK CO.**
Arcade Building, Terre Haute, Ind.

Murphysboro Paving Brick Co.
Manufacturers of
THE CELEBRATED
EGYPTIAN PAVING BLOCK
THE BLOCK THAT STANDS THE TEST
Prices and samples furnished upon application
MURPHYSBORO, - ILLINOIS

Pottery

All girl employes of dipping departments, glost and bisque warehouses of domestic potteries in the East Liverpool, Ohio, district have become affiliated with the National Brotherhood of Operative Potters, thereby swelling the ranks of that labor body close to 500. These employes went on strike early in the spring, and after the trouble was adjusted, it was agreed that the terms of adjustment should be made a part of the wage agreements which are to be completed this fall. The present wage agreement between domestic pottery manufacturers and the workers expires Sept. 30. Demands have been presented to the manufacturers by the workers, but up to this time no date has been set for the joint conference that is to consider the matter.

It has been pointed out that until a final settlement of the tariff has been made, a conference would be worse than useless, as, should the tariff be reduced, it will probably result in the manufacturers' presenting a counter proposition that will call for a reduction in the wage scale equal, possibly, to the reduction in the tariff. The shortage of labor may have some bearing on the matter, although it is expected that the full quota of employes will be available by the time the conference is held.

In an effort to secure 1,000 high grade, experienced pottery workers, the North American Manufacturing Company, of Newell, West Va., is conducting an advertising campaign of unusual proportions, covering practically every city in the Middle West in which general pottery is made. Some idea of the magnitude of this campaign can be gained by the knowledge that it covers more than twenty newspapers and more than 7,000 inches of advertising space. Newell is located directly across the Ohio river from East Liverpool, Ohio, with which it is connected by a modern steel bridge. It is an important pottery centre, being the home of the 30-kiln Homer Laughlin China Company's plant, the largest pottery plant in the world, and of the Edwin M. Knowles China Company's plant, both of which were recently described in "Brick & Clay Record."

A nine-kiln white ware pottery is to be built at Mobile, Ala., by Pittsburgh, Pa., and East Liverpool, Ohio, people. Plans have progressed to the point where work on the foundation has been started. Cassius Metsch, of East Liverpool, drew the plans for this plant, and it is asserted that a large number of applications have been made to the Ohio people for positions in this southern pottery. It will be the first and only white ware pottery south of the Ohio River, outside of those in West Virginia. A gas producing plant will be built in connection with this pottery, and it will be the only plant in the world to have such an auxiliary. It is claimed that gas manufactured at the plant can be produced at less cost per thousand cubic feet than is charged for natural gas, or for manufactured gas which has to be purchased.

General Manager Con. Cronin, of the Salem (Ohio) China Company's plant, while at Mt. Clemens, Mich., for the summer vacation period, suffered a partial stroke of paralysis, and had to be brought back to his home in Salem. Until he is able to resume his work, the manufacturing department of this plant will be under the direction of Patrick McNicol, who is one of the owners and managers of the Standard Pottery Company, of East Liverpool, Ohio.

Judging from the rapidity of the construction work at the 15-kiln plant of the Edwin M. Knowles China Company, at Newell, W. Va., and the 15-kiln plant of the Homer Laughlin China Company, of the same place, it is asserted that the first pieces of ware will be made in these plants some time in November. The new plants are nearly under roof, and as thereafter all work will be "inside" no time will be lost on account of bad weather.

The plant of the New Lexington (Ohio) High Voltage Porcelain Company, which was offered for sale recently, under the sheriff's hammer, was bid in by Dr. G. S. Cortright of New Lexington, for $4,334, which was two-thirds of the appraised value. Dr. Cortright was trustee for the old owners and it is said that he will again place the plant in active operation.

Fire Brick and Refractories

Activity in the steel trade has made a market for fire brick and refractories that promises to make 1913 a banner year for producers of this material. The immense improvements at Duluth, Minn., and additions to other steel producing plants have made increased prices the rule, rather than the exception and altogether, the producers of silica brick, magnesite, chrome and fire-clay refractory products are getting ready to enlarge their plants and increase their capacities as soon as the producing season is over. New plants are being started and there is a growing demand, among owners of fire-clay deposits, for information as to costs of production and and equipment and regarding markets that augers a new influx of capital into this promising industry. One company has already made plans for an extensive and intensive advertising campaign, to gather into its fold the "small buyer" who, while he takes his proportion of fire brick in less than carload lots, pays a very satisfactory price. The recently formed Refractories Manufacturers' Association has come out strongly for a standardization of shapes and sizes and for authoritative tests that will put the "just as good" brick where it belongs—either on the same level as the specified brand, or in its real class—and eliminating the "personal preference" of superintendents and chiefs-of-works, for one brand to the elimination of all others. While it is granted that the saving effected by a change from one brand to another is, at times, very small, and the loss sustained by a trial brick's failing to live up to the claims of its makers, the progress of manufacture is such that better brick are being produced every day, and it is imperative that these brick, with their great efficiency, be given a chance to demonstrate their good qualities in actual service, particularly if they have passed some standard test, conducted by some body far removed from any suspicion of bias or prejudice.

The large buyer of refractories knows that he is paying, in addition to the "Cost-plus-fair-profit" he expects to pay—the entire cost of expensive dinners, taxi-cabs and entertainment, not to mention the high salaries of the men who give them—expense account items that have nothing to do with the demonstration of quality, but merely to obtain a chance to embark upon another expensive (to both buyer and seller) series of experiments that might better be made by the American Society for Testing Materials, or some other such body, with a national reputation for fairness, thoroughness and authority.

What the paving brick men are doing in the way of standardization, is a light in the present darkness of uncalled for selling expenses attached to the ultimate cost of refractories.

Near Claysburg, in Blair County, Pa., the Standard Refractories Company, which has a capital stock of $125,000, will erect a silica brick plant on a 25-acre plot which it recently procured, the plant having a capacity of 30,000 per day. Thomas N. Kurtz, of Mt. Union, Pa., is president of the company, while O. H. Hewitt, of Hollidaysburg, Pa., is secretary. Dr. W. T. Shaffer, of Huntington, Pa., is the treasurer of the corporation.

A new fire brick plant is in course of construction at Santa Fe, New Mex., where the New Mexico Fire Brick Company has completed two kilns, each with 60,000 capacity and is sinking a double compartment shaft. About 30 men are employed in the construction work.

FIRE BRICK STATISTICS.

According to the report of the United States Geological Survey (July, 1913), Pennsylvania ranked first among the states in 1912, in the value of the fire brick produced, the amount being $6,178,870; Missouri came second, with $1,941,347; Ohio was third, with $1,629,638; New Jersey, fourth, with $1,460,988, and Kentucky, fifth, with $1,000,056. The average prices obtained in the five states mentioned, were from $17.16 per M., in Ohio, to $24.04 per M., in Missouri.

Triumph Steam Brick Dryer

The only successful low pressure system known without vacuum pump. Adapted for clay containing large percentage of moisture.

The C. O. Bartlett & Snow Company
CLEVELAND, O., U. S. A.

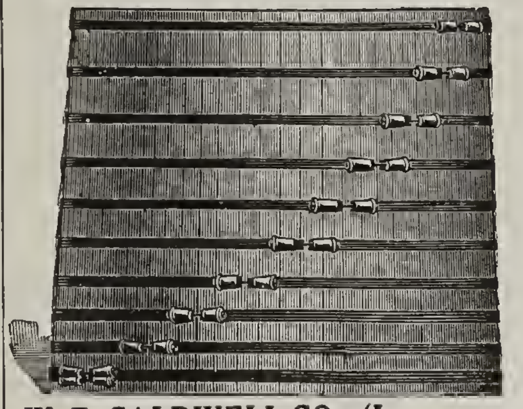
RICKETSON'S MANUFACTURED BY
YOU CAN'T FADE 'EM
PAINT WORKS
MORTAR COLORS

There's one "best" in every line, but that is not always best for everyone concerned. In the building trades

Ricketson's Mineral COLORS

are acknowledged to be the best choice for *everybody*. Best for the architect because purest. Best for the contractor because they go farther. Best for the owner because they never change their color.

For Mortar, Brick, Cement, Stone, Etc. Red, Brown, Buff, Purple and Black.
RICKETSON MINERAL PAINT WORKS MILWAUKEE, WIS.



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The construction of
Caldwell Cypress Tank
is based upon scientific and conservative engineering principles that eliminate every point of weakness found in ordinary tanks.

The proven durability of the tank material, the scientific hooping and the expert construction, all combine to make the Caldwell Tank wear, last and give satisfaction. Get our illustrated catalogue before buying.

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Tanks { Steel-Wood / Galvanized } Towers
Wind Mills - Pumps - Gas Engines

Absolute Control of Temperatures in all Kinds of Kilns and Furnaces
Heraeus Le Chatelier
PYROMETER
Recommended by the highest authorities

For measuring temperature between 0 and 1600 deg. Celsius, equal to 2920 deg. Fahrenheit. Successfully used in establishments for the manufacture of Brick, Pressed Brick, Terra Cotta, Pottery, Porcelain, Stoneware, Chamotte, Cement, Glass, Iron and Steel and other metals, particularly for Hardening and Annealing, also for Molten Metals, Cartridges and Ammunition, Chemicals, Gas Accumulators, and by Boiler Inspectors, Schools and Colleges.

Heraeus Patented Electrical Furnaces
For Laboratory and Experimental Use

Fused Silica Ware of Every Description at Moderate Prices

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of every description. This Heraeus Patented Fused Quartz Glass is not affected by any changes of temperature whatsoever, and the co-efficient of expansion is only 1-17 that of platinum. It is of the utmost importance for all purposes where the above qualities are essential. Write for information. Pamphlets and References on Application.

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Write today for prices

Sales Offices: New York, Chicago, Pittsburg, San Francisco
Agents for Canada:
Canadian Fairbanks-Morse Co.
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We Reline Press Boxes

We reline any make and for any shape brick. No job is too exacting for us — none too small or too large

We make Kiln Bands, Kiln Band Lugs, and Grey Iron Castings for Grinding Pans. Special Foundry Orders are a Specialty. Submit sketch or specifications.

Repairs for
Brick Machinery and Dryers

We solicit inquiries from discriminating buyers.
What are your requirements?

Bolivar Foundry and Machine Company
BOLIVAR, PA.

Are Your Freight Rates Satisfactory?

Did it ever occur to you that your competitors in many instances have rates that are predicated upon a more equitable basis due entirely to the aggressiveness of expert traffic men?

We have in our employ men who thoroughly understand these vexatious traffic problems and are prepared to assist you in every possible manner.

Results Produced or No Charge

GENERAL TRAFFIC ASSOCIATION, Inc.
715 14th St., N. W., Washington, D. C.

PERFORATED METAL SCREENS
As required for BRICK MAKERS USES.

PERFORATED SHEET METALS OF EVERY DESCRIPTION
HENDRICK MANUFACTURING CO.
CARBONDALE, PENNA.

Manufactured by
HENDRICK MFG. CO.
CARBONDALE, PA.

New York Office
Room 1028 Cortlandt Building

Drain Tile

Mayer & Smotherton have begun to make a porous tile for farm drainage purposes at their new plant, which is located in Elk City, Okla. Several good orders have been booked and from all appearances, the plant will run full time, well into the winter.

A new company, called the Clay Products Company, has been organized at Freeport, Ill., to take over the property of the Clay Products Company, of Hollandale, Wis. H. R. Porter, of Freeport, is president; M. C. Jenkins, secretary-treasurer, and Arch. E. Ray, of Madison, Wis., is manager. The general offices of the company will be at 143½ Stephenson St., Freeport, Ill. The new company will manufacture burnt clay products such as silo-blocks, farm tile, hollow-block and face building brick. The plant is located at Hollandale, Wis., where the company's holdings include fifty acres of clay land, and options are held on additional land, nearby. It is one of the most modern and best equipped plants in Wisconsin and with the growing demand for clay products in that state, the new management expects to make a big success of the new venture.

Trade Marks

Hereafter "Brick and Clay Record" will publish applications for trademark registration in the United States Patent Office. The fact that these names and symbols are published indicates that they are admitted to registration, and that they are going through a process of publicity called for by the patent law. If no protest be made within a specified time, registration will, in all probability, be granted.

Ser. No. 63,410. (CLASS 12. CONSTRUCTION MATERIALS.) Societe Francaise De L'Ondulium. Vitry-sur-Seine, France. Filed May 8, 1912.

AEROLITHE

***Particular description of goods.*—Building Materials, and Particularly Aeriferous Bricks, Panels, and Tiles.**

***Claims use* since Oct. 27, 1911.**

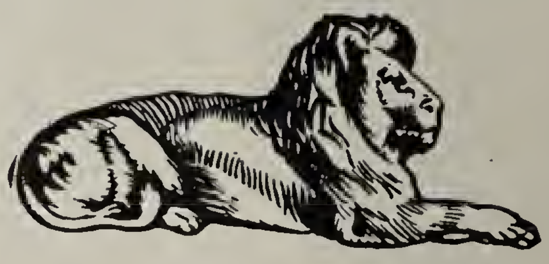
Ser. No. 68,799. (CLASS 12. CONSTRUCTION MATERIALS.) The General Ceramic Manufacturing Company, Revere and Boston, Mass. Filed Mar. 1, 1913.

GENCERCO

***Particular description of goods.*—Building-Blocks, Bricks, Pillars, Tiles.**

***Claims use* since Oct. 11, 1912.**

Ser. No. 70,026. (CLASS 12. CONSTRUCTION MATERIALS.) The Enamel Vitrified Brick Company, Toledo, Ohio. Filed Apr. 24, 1913.



***Particular description of goods.*—Brick.**

***Claims use* since Apr. 2, 1913.**

Floor and Wall Tile

The second annual convention of the Central District Mantel and Tile Dealers' Association was held at the Radisson hotel, Minneapolis, Minn., August 22-23. The meeting was well attended, there being 80 members present, from the district which comprises Ohio, Indiana, Illinois, Iowa, Kentucky, Michigan, Wisconsin and Minnesota. The convention opened at 10:30 A. M., Friday with an executive session. In the afternoon, a trolley and boat trip was given to the ladies and visitors, to Lake Minnetonka. The various committees held their meetings in the afternoon, also, and in the evening a theater party was given.

On Saturday at 10 A. M., the closing executive session was held and the following officers elected for the ensuing year: President, Thomas E. Beck, Detroit, Mich.; vice-president, W. C. Magruder, Louisville, Ky.; treasurer, Charles Shannon, Jr., Cincinnati, Ohio. Board of directors: B. F. Moore, St. Paul, Minn.; E. P. Butler, Milwaukee, Wis.; Charles Simon, Chicago, and William Fritz, Peoria, Ill.

"Educational work, to better trade conditions, was the principal matter discussed," said Thomas E. Beck, the new president. "The best way to lay tile, how to develop a market, and show builders the advantage of tile for certain purposes are some of the matters that dealers have yet to learn.

"The labor question is another big problem. I know of instances where dealers have had to send their sons to other cities to become apprentices, because craftsmen refused to work with these sons.

"Minneapolis is one of the best tile centers in the country, but the business is not very far advanced in the West. Minneapolis and St. Paul supply a large part of the Northwest with mantel and tile products."

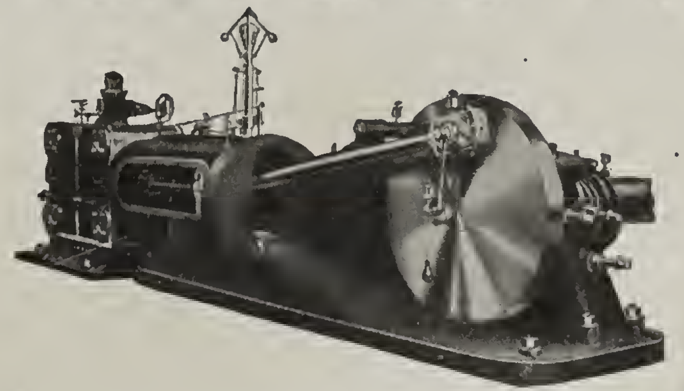
Cleveland, Ohio, was chosen as the place at which the 1914 convention will be held.

In a previous issue of "Brick & Clay Record," mention was made of a circular issued by the Trent Tile Company, relative to the proper application of both glazed and unglazed tiles; it appears that printers' ink is taking an ever increasing place in the tile business, not only in the way of catalogues, but in printed directions for the proper handling of the material after it has reached the building. The use of vitrified tile for floors and walls has grown more rapidly in this country than the number of skilled tilesetters and since a large proportion of the tiles that are sold throughout the country go to three or four large cities, skilled workmen are exceedingly scarce, except in the places where tile is most generally used.

As a consequence, when a contractor is the successful bidder on public work, such as postoffices and libraries, he frequently has to send to some city that may not be at all near by, for men to take care of what is an extremely important part of the work. Frequently he, himself, knows, but little about the proper laying of tile, and to prevent the chance of a sub-contractor's doing inferior work, he has to familiarize himself with a part of the building trade that has, up to that time, been as a sealed book to him. Here the tile manufacturers come to his aid with printers' ink. Plain, simple directions are furnished in convenient form, and with these, the general contractor can come to a distinct understading with the subcontractor.

After that, he or his superintendent can see that the work is being done in accordance with specifications that are written by men who have the interest of the industry at heart, and to whom a "scamp" job is more than an immediate loss—something beyond a temporary rejection and subsequent patching. "Standard specifications" mean the long life of any industry that has to do with building construction—"standard specifications" not only as to the quality and assortment of color, but of the manner in which the material shall be used. It is well for the manufacturers of floor and wall tile that they have taken at least the first steps in the right direction.

POWER PLANTS COMPLETE
CORLISS ENGINES, WATER-TUBE AND TUBULAR BOILERS



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COLUMBUS, OHIO
CERAMIC ENGINEERS
FACTORY ARCHITECTS

Geological Examination of Properties
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Investigations of Manufacturing Propositions
Plants Designed, Construction Superintended
and Operations Directed
Driers, Furnaces, Kilns
Remodeling Old Plants Given Special Attention
Development of New Lines of Products

Pamphlet, "Ceramic Engineering." Free

The Department of Clayworking and Ceramics.

Established by the Legislature in 1902 at the New Jersey State College, Rutgers College, New Brunswick, N. J.

Two courses have been provided: The regular course of four years; a short course of two years designed for the young man who has had practical experience in clayworking.

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"Buckeye Rails Are the Standard for Quality"
THE BUCKEYE ROLLING MILL COMPANY
Exclusively Manufacturers of First Quality Light Steel Rails and Accessories

Offices:
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BUCKEYE MEANS BEST
BEST MEANS BUCKEYE

All Sections from
12 lb. to 40 lb.
per yard

Write or
wire us,
when in need.

No order too large to handle promptly or too small to secure immediate attention.

OIL BURNERS FOR BRICK KILNS
THEY INSURE
EVEN { BURNS COLORS
LESS { OIL TIME COST
ADJUSTABLE TIP
THOUSANDS in USE
WRITE TO
SCHURS OIL BURNER CO.
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"FREEFLOW METAL"
Freeflow Metal
H. W. GERLOCK – HUNTINGDON, PA.

Gerlock's Free-Flow Babbitt Metal is anti-friction—has no shrinkage—stands heavy pressure and high speed—flows freely under all conditions and runs smooth even down to the thinness of paper.

H. W. GERLOCK, Huntingdon, Pa.

Save Your Exhaust Steam

Utilize it for drying your brick and tile. Steam costs money, and your exhaust steam can be turned into real money if you have a

National Drier

Some manufacturers make brick as the farmer makes hay, only when the sun shines. Install the National System and you will soon learn to laugh at the sun. You can run your plant the year around regardless of weather conditions, and do your drying in the quickest, best and most economical manner.

Write for particulars regarding our proposition

The National Dry Kiln Co.
1118 E. Maryland St., Indianapolis, Ind.

Hollow Block

Elsewhere in this issue of "Brick and Clay Record" mention is made of the crying need for a cheap form of construction that will be fireproof in reality, rather than in name. The large producers of hollow block have gone to the trouble and expense of securing plans for houses of so-called moderate cost, and have helped to make a splendid market for cement by tacitly advocating the use of hollow block, "veneered" with cement-stucco. This has, to a certain extent, divorced the hollow block interests from their brothers-in-clay and in the national movement for better housing, one branch of the burned clay industry is, in a way, arrayed against the other. A little leaning, by the hollow block men, toward houses that are veneered with brick (and many excellent examples exist) would bring a wave of support to hollow block, from producers of face brick.

Choosing between the face-brick manufacturer and the cement-stucco man as a compatriot, the hollow block man will find at least one thing in favor of the former—his product "stays put" and wears well—something that stucco certainly does not. A question may be raised as to the economy of the face-brick, backed up by hollow block construction, but if the hollow block men, in giving the public the designs and floor plans of houses already built, or that may be built for certain sums, would give alternate figures, on brick veneer and on cement-stucco, it would be a step in the right direction. And who knows but that it would result in a combination of advertising—face brick men issuing plans of hollow block houses, veneered with face-brick, instead of "all brick"—anyway, it is worth a thought.

A new silo-block, known as the "Balmat" has recently been put upon the market by the American Brick & Tile Company, of Mason City, Iowa. The designer and inventor is O. T. Balmat, who has a farm just north of Mason City, and who has made a practical demonstration of the good points of the new block, by erecting a silo himself. A patent has been applied for, and the American Brick & Tile Company expects to revolutionize silo building in the near future.

The block are thirty inches long, twelves inches wide and four inches thick. Those are the dimensions promised, but the block are a trifle in excess of these figures to insure full measurment. The block are hollow, similar to other hollow block, and the clay is prepared in a similar way to the preparation for sewer pipe, so that the block are stronger than the ordinary block and will stand greater strain and pressure.

Along the sides of the block, the long way, are grooves two inches wide and a half-inch deep or more, which is one of the chief merits of the block for construction. The block are laid the long way up and after the joints have been cemented together in the usual fashion a mixture of one part cement and two parts sand is poured in the groove, thus inseparably binding the block together along what has been, heretofore, the weakest joints. The weight on the horizontal joints takes care of itself, but the perpendicular joints, before these new blocks were invented, had to be reinforced against the lateral pressure of the silage.

These block being of greater size with joints only every two feet and a half, also reduces the chance of moisture to get in or to get out of the silo and with a coating of waterproofing paint, the ravages of moisture either from within or without have been reduced to a minimum if in fact not entirely obliterated.

Mr. Balmat is not simply a theorist. He backs up his beliefs and plans with tests of his own. Therefore, the first silo to be built of these block he built for himself and will follow it soon with a twin silo. The one erected and just completed is sixteen feet in diameter and forty feet high with a cement roof running to a peak, making it fifty feet to the top. The block are patterned on a radial of sixteen feet and such a silo will hold eighty tons of silage. Besides the reinforcement of the perpendicular joints with the groove of cement, iron bands thirty inches apart are used on the outside as in the frame silos. If there should by any chance be unusual strain these bands will avert the danger and if any one is broken at any time it can readily be replaced. The Balmat silo is built on a solid brick foundation.

Machines and Equipment

Bechtels, Ltd., manufacturers of clayworking machinery at Waterloo, Ont., has opened an office at Winnipeg, Man., Mr. W. N. Courtenay being in charge.

A profusely illustrated tall, thin booklet has been issued by the Dodge Manufacturing Company, of Mishawaka, Ind., describing in detail the Dodge-Zimmer Conveyor. The cuts are large and very clear, a detail that many books illustrating machinery fail in, and the description of the conveyor system is told so convincingly that unless you want to put one in your plant right away, you will do well not to send for the book.

J. R. Gilcrest, formerly proprietor of the Toronto Machine Company, has disposed of his interest in that concern and has organized the Manufacturers' and Contractors' Supply Company, with offices and warerooms in Toronto, Ohio. This concern will handle a full line of steam engines, pumps, boilers, shafting, pulleys, elevator buckets, brick, tile and pipe presses and dry and wet pans, as well as a general line of clayworking machinery and parts, being prepared to furnish quick repair service in every department of clayworking.

The Diamond Brick Company, of Ferris, Texas, has just made a shipment of two cars of building brick to South America. The brick were shipped from Ferris to Galveston by rail, and reloaded on steamer for Tampico, Old Mexico, where they were again transferred to steamer for the South American port of destination. This marks another step in the development of a foreign trade for American brickmakers, as outlined in previous issues of "Brick and Clay Record." The brick are dry-press, made on four-mould Boyd presses.

PHOENIX BUILDERS ARE "BACK TO BRICK."

Busy Arizona City Uses Brick in Seventy-Five Per Cent of Buildings Erected in 1913.

"Brick and Clay Record" is indebted to Mr. Vernon L. Clark, manager of the Phoenix (Ariz.) Brick Manufacturers' Exchange, for the information that, in building improvement valued at $557,883 from January 1 to June 30, 1913, brick construction was called for on 75 per cent, concrete on 19 per cent and frame on the remaining 6 per cent. He further states that all of the common brick yards are members of the exchange, and that they are all running to capacity, with every promise of a long, busy season.

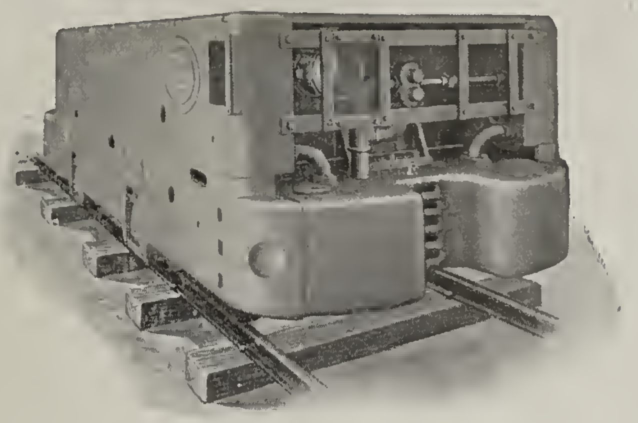
What other city, larger or smaller than Phoenix, can give as good a record of sensible construction?

CANADIAN OFFICIALS AT ROAD CONGRESS.

Hon. David F. Houston, Secretary of Agriculture, will represent the national administration at the Third American Road Congress, which will be in session at Detroit, Mich., during the week of September 29th. The Congress is the annual clearing house of the organized road movement of America, and is participated in by twenty-six great organizations under the leadership of the American Highway Association and the American Automobile Association.

Premier Borden of Canada has advised the management of the Congress that the Canadian government will be represented by a member of the cabinet. The fact that the United States government and the Canadian government will thus be officially represented at a good roads congress held on the border line, will bring about a great attendance from both countries and will be followed by a marked stimulation of the road movement in both.

Gasoline Motors



Over 300 in Use—

Used by 150 Companies.
Used for Underground
or
Surface Haulage—
2½ to 16 Tons Weight.

Geo. D. Whitcomb Co.
Rochelle, Illinois

CLAY HAULAGE
Reduce costs of transportation by using a
Davenport Industrial Locomotive

Small Size—Reasonable Cost—Especially built for use of clay products manufacturers, for hauling clay or shale from pits or mines to plant.

Cheaper Than Horse Transportation

and will reduce costs of delivering your material to your plant, thus increasing profits.

All About Modern Industrial Railways

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DAVENPORT, IOWA

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St. Louis: 654 Pierce Bldg.
Chicago: 12 and 14 So. Canal St.
Seattle: 617 Western Ave.
St. Paul: 1308 Pioneer-Press Bldg.
New York City: 362—50 Church St.
New Orleans: 208 Godchaux Bldg.
Pittsburgh: 405 Oliver Bldg.
Montreal: 286 St. James St.
Winnipeg: 45 Canadian Life Block
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Big GANDY Belts On Difficult Drives!

The two little pictures down at the bottom of this ad show a few of the Gandy Belts operating on difficult drives in the plant of the Oklahoma Portland Cement Company, Ada, Oklahoma.

The Gandy Belt

is made of an extra heavy close woven cotton duck, stitched with a heavy twine saturated in a compound of purest oils, making it steam, heat, water and dust proof. 34 years' success proves the Gandy will stand up under hard service in the brick field. One-third the cost of leather belting — very much less than that of rubber belting.

Write today for samples and full information.

The Gandy Belting Company
732 W. Pratt Street
Baltimore, Md.
New York Office, 88-90 Reade St.

To Prevent Scum Appearing on Your Brick, Terra Cotta, Etc., Use

R. H. Precipitated Carbonate of Barytes

Literature on Application

Other High Grade Chemicals For Clay Industries

The Roessler & Hasslacher Chemical Company

100 William Street, New York

Sand-Lime Brick

THE SAND LIME BRICK ASSOCIATION.

Headquarters, 211 Fillmore Avenue, Buffalo, N. Y.

President, S. O. Goho, Harrisburgh, Pa.
Vice-president, F. B. Allan, Toronto, Ont.
Secretary, W. E. Plummer, Jr., Buffalo N. Y.
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G. Silvester, Calgary, Alta.; E. G. Chapman, Minneapolis, Minn.; E. M. Burchfield, Rochester, N. Y.; H. H. Tifft, Tifton, Ga.; L. W. Penfield, Willoughby, Ohio.

In an article which appeared in the Spokane (Wash.) "Spokesman" some weeks since, an allusion was made to the Spokane Pressed Brick Company. It read as follows:

"Using raw materials of the Inland Empire exclusively, but selling its product widely throughout the country, the Spokane Pressed Brick Company, located north of Hillyard, about one mile from Mead, is one of the active members of the Buying-at-Home league that few people know anything about. It is located off the main county road and can not be seen from it, and yet for three years, it has been manufacturing sand-lime brick at the rate of 40,000 a day and selling them as fast as they could be turned out. It gets its lime from Evans, Wash., and its sand from a huge pit on its own property. The plant is the only one at present, in the district that A. L. White and Jay P. Graves propose to make a great industrial centre."

The purpose of "Brick & Clay Record," in reprinting this paragraph, is to call attention to the fact that a representation is made of this plant's being an ardent supporter of the "buying-at-home" principle, while shipping its product, so the "Spokesman" says, "widely throughout the country."

The very basis of our National prosperity lies in the interchange of commodities. The principle that makes it obligatory upon building committees to buy material "made right at home"—not because they are cheaper or better, but because local capital is invested—is "playing the baby act" to an extent that makes many a good salesman and many a conscientious manufacturer, feel that honest competition does not pay. For the sake of the men who are interested in Spokane enterprises, particularly in brick and clay products generally, we hope that the "Spokesman" is in error and that they are not in sympathy with any league that has for its title so un-American a name and object as "buying-at-home," the while they are shipping their product "widely throughout the country."

The new plant of the York Sand-Lime Brick Company, of Toronto, Ont., has been in operation for about six weeks, and has a fair stock of brick on hand, although beginning to fill orders. Machinery is installed for the production of 40,000 brick for the ten-hour run, and consists of two Berg four-mold presses, two wet pans, and three hardening cylinders. The plant is using pre-hydrate with silo storage. The factory is practically a duplicate of the system which originated at the Buffalo Sandstone Brick Company's plant, and which is also used by the Harbour Brick Company, of Toronto, Ont. The product is excellent and should sell readily under normal conditions.

The general building trade of Toronto, Ont., has not been quite up to the mark for the last sixty days, but indications point to a resumption of activities in the early future. In this busy Canadian city machinery is in operation to produce upward of 200,000 sand-lime brick per day, or over 60,000,000 per year.

In our "Questions and Answers" Department, this issue, will be found an answer to a correspondent who wants books on Sand Lime brick. Can you help him out?

Freight Tariffs

Clayworkers may say, slangily, "I should worry," when the question of weights is mentioned, many of them coming under the beneficient ruling of "Weighing Bureaux" and being enabled to stamp "Do Not Re-Weigh" on their bills of lading. The pleasant little visit of the representative of the "Weighing Bureaux" to the yard, and the still more pleasant task of selecting "at random" a few brick that "do not weigh more than our regular average" is a protection against imperfect scale weights taken at various points along the road over which cars of their products pass. This is "a little bit of all right" if the samples are really representative, and, of course, yours were. But are you *quite sure* that your competitor's shipments are in exact accordance with the real weight of his product? You know that, if he makes a larger brick than yours, the generous size is being used as an argument for its adoption on work where your brick is in competition. He pays, perhaps, the same proportionately larger amount for his increased clay consumption, his increased burning cost and all that—but, as you already know, the freight on brick is out of all proportion to the other elements of cost, it sometimes costing as much to transport brick to its destination as the selling price is, at the plant.

A publication of the weights granted as standard by some of the "Weighing Bureaux" would prove interesting reading, and would, perhaps, explain away that knotty problem—how the other fellow does it and still keeps out of the hands of a receiver.

The Interstate Commerce Commission, in a recent report, stated that it found the majority of track scales unreliable, and this affects you, every time a shipment from your plant goes outside of the jurisdiction of the "Weighing Bureaux" that is working in your territory. Be assured that, if defective track scales give the carrier a less weight than that shown on your bill of lading, the admonition "Do Not Re-Weigh" will be followed to the letter, so far as reports are concerned. If, however, they show that the weight is greater than that you figured on when you made the sale and the shipment, you will get an increased expense bill, if you have sold "f. o. b. destination" or "freight guaranteed."

And then again, there is the item of coal and other supplies that come into your plant, and enter into your manufacturing cost, and that are not estimated by a "Weighing Bureaux." Of these, the findings of the commission are full of interest to clayworkers. It states that a modern track scale properly installed and showing a variation of more than 100 lbs. is not regarded as in order and that a test should take place not less than once in each 60 days. That cars coupled at both ends should never be weighed while in motion, but may be weighed while in motion if uncoupled at both ends and on scales specially designed for the purpose of such a method of weighing. That wrong stencilling of the tare weight of cars is a prolific source of error, and that some Federal tribunal, perhaps the Interstate Commerce Commission itself, should be given authority to fix the point or points at which track scales shall be located, to prescribe a standard for such scales and for their installation, and to test, or supervise the testing, of such scales and supervise their operation.

As in the making of prices, safe business is premised on fixed rates, so in the paying of freight charges, safe competition is premised on equable tariffs, classifications and rates. You may have some advantage over one of your competitors, *are you sure that some other competitor has no advantage over you?*

Since our last issue, the following changes have been made in the carload rates of freight on various clay products, and are now in effect:

From Eastern Points.

From Beech Creek, Bigler, Clymer, Faunce, Irvona, Karthus, Krebs, Lock Haven, Mahaffey, Mill Hall, Monument, Orviston, Patton, Phillipsburg, Snow Shoe, Wallaceton and Woodland, Pa., Brick and articles taking same rates, to Grand Mere and Shawinigan Falls, P. Q., 22¼c per cwt.

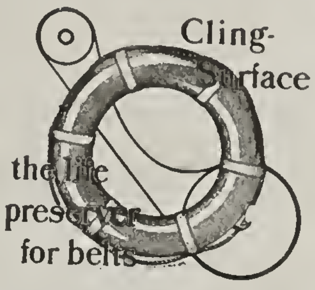
From Cohoes, N. Y., Common brick, to Goshen, N. Y., 8c per cwt.

$90 to $9000 Per Year

Cling-Surface Treatment of Your Belts May Save Much of This for You Every Year

The table below was compiled on the assumption of 4 lb. of coal per horse power hour, 300 working days per year, 10 running hours per day, and a coal cost of $3.00 per ton.

In a 200 h. p. plant operated with tight, untreated belts and friction load of 40 per cent, which is a common figure, treatment of the belting with Cling-Surface will permit slack or easy running and will reduce the friction load possibly to 20 per cent. The 20 per cent power saving thus effected, according to the table, amounts to $720 per year. Isn't that worth while?


Cling-Surface
the life preserver for belts

Horse Power of Plant	PER CENT SAVING IN POWER 10%	20%	30%	40%	50%
50	$ 90	$ 180	$ 270	$ 360	$ 450
100	180	360	540	720	900
200	360	720	1080	1440	1800
300	540	1080	1620	2160	2700
400	720	1440	2160	2880	3600
500	900	1800	2700	3600	4500
1000	1800	3600	5400	7200	9000

We needn't say more. Cling-Surface will do much in any plant in which there are belts. It stops slip, waterproofs and preserves belting, and ***it makes belts pull without making them sticky.***

Let us refer you to nearby installations where savings have been made in this direction,

Write now for more facts, figures and literature,

Cling-Surface Company

1029 Niagara St **Buffalo N Y**

New York Boston Chicago Denver Atlanta Memphis etc

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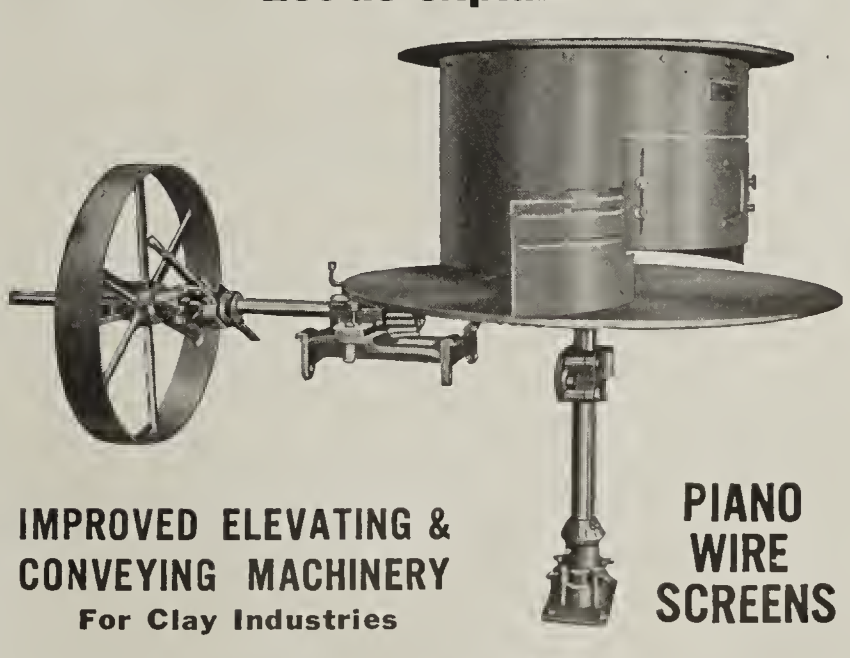
COLUMBUS

Automatic Feeder

INCREASES CAPACITY — IMPROVES PRODUCT

Let us explain!



IMPROVED ELEVATING & CONVEYING MACHINERY

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PIANO WIRE SCREENS

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The Ceramic Supply & Construction Co.,

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The Rust Clay Feeder

You miss the difference between real profits and working for a living every day you fail to install one of these machines.

The Rust Clay Feeder does away with hand labor and one machine will cut your labor bill just $500 every year it is employed.

It increases your capacity—it improves quality and in every way does better work and more work than human hands can do.

Shall we send you absolute proof of these statements? We have them.

Marion Machine, Foundry & Supply Co.
Marion, Indiana
P. O. Box 395

SECOND REASON WHY

"NESTOR"

IS UNEXCELLED FOR BRICK PLANT WORK

ALWAYS PLIABLE, FLEXIBLE, NEVER BECOMES HARD LIKE A BOARD

DO YOUR BELTS CONTAIN THIS FEATURE?

The American Fabric Belting Co.
Cleveland, Ohio

From Cohoes, N. Y., Common brick, to Lansford, Pa., 11¼c per cwt.

From Corning, N. Y., Flat flooring or roofing brick, to Boston, Mass., 12½c per cwt.

From Corning, N. Y., Building and paving brick and flat flooring or roofing brick, to Galeton, Pa., 6¼c per cwt.

From Green Island and Troy, N.; Y., Fire brick, to Pittston, Pa., 4¼c per cwt.; to Garneau Junction, P. Q., 14c per cwt., to Ottawa, Ont., 10c per cwt.

From Green Island and Troy, N. Y., Fireproofing and hollow building tile, to Ottawa, Ont., 10c per cwt.

From Green Island and Troy N. Y., Common building brick, fire brick, hollow building brick and hollow building tile, to Quebec, P. Q., 15c per cwt.

From Kushequa, Pa., Brick, to Watertown, N. Y., 13½c per cwt.

From Newburgh, N. Y., Brick, to Stroudsburg, Pa., 4¾c per cwt.

From Rochester, N. Y., stations, Clay conduits, to Philadelphia, Pa., 11c per cwt.

From Solvay, N. Y., Paving brick to Little Ferry, N. J., 10c per cwt.

From Syracuse, N. Y., Brick, clay and clay products, to Manchester, N. H., 12½c per cwt.

From Syracuse, N. Y., Paving brick, to Newark and Paterson, N. J., 8¼c per cwt.

From Middle West Points.

From Alton, Ill., Brick (except bath and enameled) and articles taking same rates, to Milwaukee, Wis., 9c per cwt.

From Chaska, Minn., Brick, except enameled and terracotta, to Winnipeg, Man., 17¼c per cwt.

From Chicago Heights, Coal City, East Joliet and Joliet, Ill., and from Hammond, Ind., Brick and articles taking same rates, to Palatine, Ill., 3½c per cwt.; to Wauconda, Ill., 4½c per cwt.

From Cincinnati, Ohio, Brick and articles taking same rates, to Albion, Ind., 7¼c per cwt.; to Champaign, Ill., 7¾c per cwt.; to Butler, Pa., 8¼c per cwt.

From Coal City, Ill., Fire clay, to Sault Ste. Marie, Mich., 12½c per cwt.

From Galesburg, Ill., Brick (except bath and enameled) to Fargo, N. D., 19c per cwt.

From Kankakee, Ill., Brick and articles taking same rates, to Scioto Mills, Red Oak, Buena Vista and Orangeville, Ill., and to Clarno, Monroe, Stearns, Elmers, Monticello, Belleville, Basco, Fitchburg, Summit and Madison, Wis., 6c per cwt.; to McConnell and Winslow, Ill., and to Martintown and Dill, Wis., 7c per cwt.

From Mason City, Iowa, Brick, fire clay conduits, and tile, to Virginia, Aurora, Biwabik, McKinley, Aparta and Eveleth, Minn., 15c per cwt.

From Mason City, Iowa, Brick and articles taking same rates, to Kansas City and St. Joseph, Mo., and stations taking same rates, 9½c per cwt.

From Minneapolis and Minnesota Transfer, Minn., Brick and articles taking same rates, to Hazel Park, Minn., 2 4/10c per cwt.; to Midvale, Minn., 2 6/10c per cwt.; to Oakdale, Minn., 2 6/10c per cwt.j to Henderson, Minn., 4 6/10c per cwt.; to Le Sueur, Minn., 4 7/10c per cwt.; to Ottawa, Minn., 4 9/10c per cwt.

From Quincy and Springfield, Ill., and rate points, Brick and articles taking same rates, to Hazel Park, Minn., 2 4/10c to Zanesville, Ohio, 11½c per cwt.; to Monongahela, Pa., 13c per cwt.; to Terre Haute, Ind., 5¾c per cwt.

From Rockland, Mich., Clay to Cleveland, Akron and East Akron, Ohio, 18¾c per cwt.

From Western Points.

From Hannibal and Louisiana, Mo., Brick and articles taking same rates, to Marion, Ind., 7½c per cwt.; to Zanesville, Ohio, 11½c per cwt.; to Monongahela, Pa., 13c per cwt.; to Terre Haute, Ind., 5¾c per cwt.

From Hebron and Dickinson, N. D., Brick (pressed), to Judith Gap, Mont., 24c per cwt.; to Black Eagle, Rainbow and Great Falls, Mont., 30c per cwt.; to Broadview, Mont., 20c per cwt.; to Columbia Falls, Kalispell, Whitefish and Somers, Mont., 35c per cwt.; to Big Sandy, Mont., 33c per cwt.: to Kolin, Rossfork, Kingston and Stavely, Mont., 26c per cwt.; to Lewiston, Mont., 27c per cwt.; to York and Pleasant Lake, N. D., 13c per cwt.; to Ross, N. D., 18c per cwt.

From Lincoln, Neb., Brick (except bath and enameled) and hollow building tile, to Fairbury, Neb., 3½c per cwt.

Trade Review

New York.

Conditions in the eastern clay products business have shown some signs of improvement during the last fortnight, with the exception of Hudson river common brick. That department is still in a weak wholesale market with prices lower than they have been ever since the Greater New York Brick Company was formed over two years ago. Current quotations at this date are $6.00 to $6.50, as against $6.25 to $6.50 a week ago. There are a few barge loads of Hudson river brick selling for $6.75 per M., but these invariably are high grade selected brick. No brick is bringing $7.00, the normal August price, and there have been cases where even $6.00 has been shaded for light-burned run-of-kiln where the material was to be used for filling. There is practically no market here for second-hand brick even at the $2.50 figure ruling.

The market for Raritan river brick here is steady, but far below August normal. Prices rule at about the same level that Hudsons bring, although there is some Raritan brick under contract that skim $6.00. This, however, is not open market quotation and is referred to only to show how wide the price range for common brick is in this market at present. In Newark the yard prices have shrunk from $8.25 ruling in the latter part of June and the first part of July to $7.50 to $7.75, with demand generally poor until the last week, when the inquiry came into dealers' hands for brick for the new million-dollar skyscraper and the several new apartment houses that were slated to wait until next spring before going ahead.

The sign of an early upturn in the local brick market was responsible for a more optimistic state of mind among the Hudson river brick manufacturers. Only two plants have stopped molding, whereas at least half a dozen plants were scheduled to close up at the first of the month.

Some idea of the crowded condition of the local wholesale brick market can be obtained when it is stated that in addition to more than 80 barges, aggregating about 28,000,000 brick, that are here in the market there were last week at least a dozen barges riding at anchor awaiting berthing space. Dealers are extremely independent. They unload barges only as they can ride to job and they are buying only as they require material so that for the first time in a decade there has been absolutely no inquiry for future delivery. Even in the middle of winter there are seldom more than 70 bargeloads under cover.

Varying reports are given regarding the state of the terra-cotta market. Some companies are fairly busy while others are barely able to keep their organizations together on current orders. All companies, however, report that their estimating departments are busy which is considered a favorable sign for the future. The fireproofing terra-cotta companies, on the other hand, are moderately busy. Those in the Perth Amboy district are replenishing their stocks which were depleted during the recent strike. In this department the volume of current business is fairly satisfactory.

The general building outlook is little changed from last month. The bitter feeling that prevails emanates from the belief now rather general that the business retraction has reached its lowest ebb and that Wall Street has already re-adjusted itself to any tariff or currency changes that Washington may enact.

Paving brick interests here are direct victims of the unfortunate tangle in the governor's office in Albany. Practically no road work is going ahead and contractors are very dubious about going ahead with work with doubt overhanging the status of highway commission and of the governor. If the contractors stop work already authorized they are liable to penalty of cash forfeiture, and if they go ahead with work they run the risk of prolonged litigation which will eat deeply into profits. To recognize Sulzer as governor involves a risk and to honor Glynn's orders also involves a gamble with luck. So road work and paving brick business is severely crippled at present.

The prospects for early construction of the new state prison are extremely dim, owing to the complicated condition of affairs in Albany, and this is a disappointment to Hudson river common brick manufacturers who looked to this opera-

Bucyrus Dragline Excavators

THIS BUCYRUS ELECTRIC DRAGLINE EXCAVATOR OWNED BY THE CHEROKEE BRICK CO. OF MACON, GA.

has made it possible to dispense with one locomotive and crew and nine men in the pit. Mr. W. E. Dunwody, the president, says: "Any man who is digging clay where his clay hole is subject to overflow, cannot afford to use anything other than a dragline, and there is no machine in the United States which is equal to that turned out by the Bucyrus Company."

BUCYRUS COMPANY
P.O. Box A. South Milwaukee, Wis.
New York Chicago Duluth Birmingham
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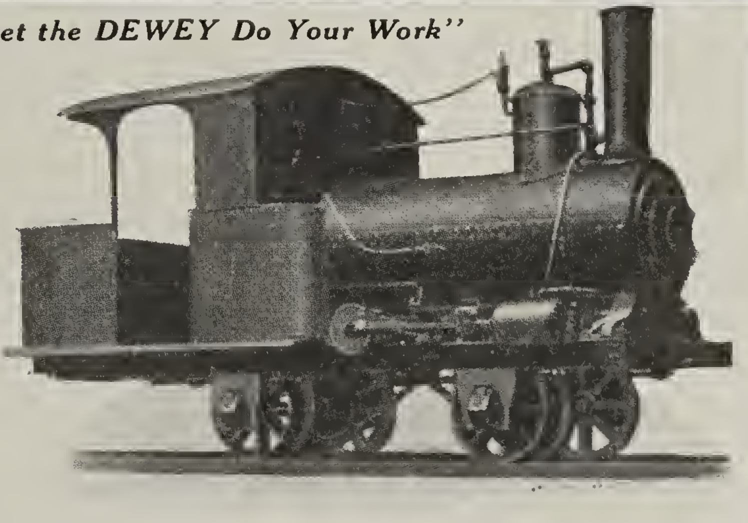
"Let the DEWEY Do Your Work"



The Boiler of the DEWEY

The Borden Brick & Tile Co., Goldsboro, N. C., is using a DEWEY locomotive. It discarded the mule-driven car and declares it not only got an increased efficiency but reduced the cost of hauling.

This concern hauls eighteen cubic yards of clay to a load on a trip of one and a half miles.

How many mules would it take to do this same thing and how long would it take them to do it?

It is our own special design. It has unusually large capacity, is a quick steamer, and is economical in fuel consumption.

These three characteristics have made the DEWEY especially adapted to clay pit work.

Strong, Safe, Long-Lived

The DEWEY boiler is designed to reduce to a minimum the numerous angles and corners and pockets which serve as collecting places for mud and scale—distressing features about every standard locomotive boiler.

The DEWEY boiler, therefore, is stronger, safer and longer-lived and does BETTER work than the regular types.

The DEWEY sells for several hundred dollars less than any of the standard type locomotives of the same size and weight.............. **$1200**

DEWEY BROS.
Goldsboro, N. C.

Chase Improved Flexible Bearing Folding Deck Dryer Car

See this car before placing your order.

We also manufacture a full line of Side Dump, Bottom Dump and General Purpose Cars, Transfer Cars, Turntables, Switches, etc.

The Chase Foundry & Mfg. Co., Columbus, O.

The Superior Quality of

"INDUSTRIAL CARS"

is the

result of many years of practical experience and there has been no branch of clay manufacture in which they have not been placed in service.

The investment demanded for the best possible car for your plant requires careful investigation.

The Industrial Car will be your first choice and the one eventually purchased. The manufacture of dryer cars is only a small part of our line. We have a car for every need.

Write for our catalog and let us submit an estimate for the coming season's requirements.

Electric Locomotive & Car Co.

Successors to The Industrial Car Co. and The Cleveland Car Co.

West Park, Ohio

tion as an outlet for a large quantity of brick that the New York market does not seem able immediately to absorb.

On the whole, therefore, the eastern clay products' situation is without change, except in sentiment, but even this is looked upon by the almost despairing brick makers as an encouraging sign.

Pittsburgh, Pa.

The demand for common brick in the Pittsburgh district is far from being good, the only very large order that has been placed recently being for a large dry goods store, mention of which has already been made in "Brick and Clay Record." The prices obtained have, however, been excellent, ranging from $7.50 to $10.00 per M., depending upon the distance of the delivery point from the yards. While there is a fair amount of construction work under way, the common brick interests are feeling the inroads made upon their business by the ever-increasing use of hollow block, which is being used for backing-up the stone and terra-cotta on nearly all of the larger structures.

Face-brick is holding its own against the inroads of architectural terra-cotta, gaining enough in the smaller work to make up for the loss in the larger class of construction. The cement-stucco craze seems to have run its full course, the smoky atmosphere of Pittsburgh being too much for the absorbent and non-cleanable nature of this material. Even the "brick-one-story-and-half-timber-above" type seems doomed to become extinct, killed by the many examples of foolhardy desire to "try something new." The darker shades of face brick, particularly those of the "Tapestry" and "Artbrique" type, are growing in favor, and, having demonstrated their ability to "keep their faces clean" are found to be excellent investments for the speculative builder, who cannot always sell as soon as he would wish. Impervious white and gray, and flashed brick—any brick that will wash clean in the rain, has a place in Pittsburgh's building life—any other kind of brick is doomed to early failure.

Architectural terra-cotta, as before mentioned, is growing in favor by leaps and bounds. The reasons for its adoption are not dissimilar to the causes that have sealed the fate of cement-stucco in the Pittsburgh territory.

Hollow block fireproofing is being more and more generally used, huge piles of this material being in place, seemingly, before every large structure now under way in this city. Gypsum "pyrobar" is also gaining a foothold, being used in interior work, where fireproofing is necessary, but where the partitions are of a comparatively small thickness. Pittsburgh is fireproofing everything except her homes, and there is a field here for a cheap type of construction that will be fireproof in reality, and not only in name. "The brick house safe from fire" burns up (or down) almost as rapidly as one of frame and stucco construction, it being demonstrated that most fires start from the inside—from defective wiring or carelessness in other quarters. A brick shell, filled with inflammable wooden partitions, inflammable floors and floor beams, while it is a step, and a long step ahead of the same construction encased in sheathing and shingles, is not up to the modern demand for safety. Here, then, is a field for the maker of really fireproof materials to come forward with a construction that will make it impossible for houses to "catch fire" inside, due allowances in the way of tile roofs and brick exterior walls being made to repel the danger that lies in a general conflagration. We have many fireproof storage warehouses to safeguard temporarily unused furniture and fireproof office buildings to shield our business men from the fire menace, but our homes, where the mantle of sleep is drawn over the defenseless ones, are tinder boxes at best.

Minneapolis and St. Paul.

The situation in the brick industry remains good in the Northwest. Several projects talked of and planned for earlier in the season, but delayed for various reasons, have materialized and the demand is for brick, with daily orders showing. Sand-lime brick are also in good demand and have been used on several large jobs in St. Paul during the season, one being a $25,000 church building in Merriam Park, and several others equally as prominent. The ruling price is around $8, delivered on the job. Kiln run and chimney brick are selling at $7.50 delivered, making an advantage of 50 cents in favor of the latter. Sewer brick is quoted at $9.50.

Proposed Standardization of Paving Brick Tests

A PORTION of the report made by Committee C-3, to the American Society for Testing Materials, at Atlantic City, N. J., June 24-28, 1913, was published in the Aug. 1 issue of "Brick and Clay Record." It referred to a proposed standard as applied to common or "backing-up" brick. The balance of the report, which is printed on this and following pages, has to do with paving brick, and covers the method of selecting samples, the construction of the rattler, its frame and driving mechanism, the operation, supervision and reports of tests, the acceptance or rejection of paving brick, the fixing of standards, etc. It also provides for and defines the visual inspection of paving brick, which covers the size, contour, color and condition of samples and of delivered brick, so far as can be judged by sight. The report is published through the courtesy of Edgar Marburg, secretary-treasurer, American Society for Testing Materials.

THE quality and acceptability of paving brick, in the absence of other special tests mutually agreed upon in advance by the seller on one side and buyer on the other, shall be determined by the following procedure, viz:

THE RATTLER TEST:—This is for the purpose of determining whether the material as a whole possesses to a sufficient degree strength, toughness and hardness.

VISUAL INSPECTION:—This is for the purpose of determining whether the physical properties of the material as to dimensions, accuracy and uniformity of shape and color, are in general satisfactory, and for the purpose of culling out from the shipment individually imperfect or unsatisfactory brick.

The acceptance of paving brick as satisfactorily meeting one of these tests shall not be construed as in any way waiving the other.

The procedure governing the Rattler Test shall be substantially as follows:

Selection of Samples for Test.

ITEM 1. PLACE OF SAMPLING:—In general, where a shipment of brick involving a quantity of less than 100,000 is under consideration, the sampling may be done either at the brick factory prior to shipment, or on cars at destination or on the street, when delivered ready for use. When the quantity under consideration exceeds 100,000, the sampling shall be done at the factory prior to shipment. Bricks accepted as the result of test prior to shipment, shall not be liable to subsequent rejection as a whole, but are subject to such culling as is provided for under "Visual Inspection".

ITEM 2. METHOD OF SELECTING SAMPLES:—In general, the buyer shall select his own samples from the material which the seller proposes to furnish. The seller shall have the right to be present during the selection of samples. The sampler shall endeavor, to the best of his judgment, to select brick representing the average of the lot. No samples shall include bricks which would be rejected by "visual inspection" except that where controversy arises, whole tests may be selected to determine the admissibility of certain types or portions of the lot having a characteristic appearance in common. In cases where prolonged controversy occurs between buyer and seller and samples selected by each party fail to show reasonable concurrence, then both parties shall unite in the selection of a disinterested person to select the samples, and both parties shall be bound by the results of the samples thus selected.

ITEM 3. NUMBER OF SAMPLES PER LOT:—In general, one sample of ten (10) brick shall be tested for every ten thousand (10,000) brick contained in the lot under consideration, but where the total quantity exceeds 100,000, the number of samples tested may be fewer than one per ten thousand, provided that they shall be distributed as uniformly as practicable over the entire lot.

ITEM 4. SHIPMENT OF SAMPLES:—Samples which must be transported long distances by freight or express must be carefully put up in packages holding not more than 12 brick each. When more than six brick are shipped in one package, it must be so arranged as to carry two parallel rows of brick side by side, and these rows must be separated by a partition. In event of some of the brick being cracked or broken

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They **slide out** easily in a nice pile.

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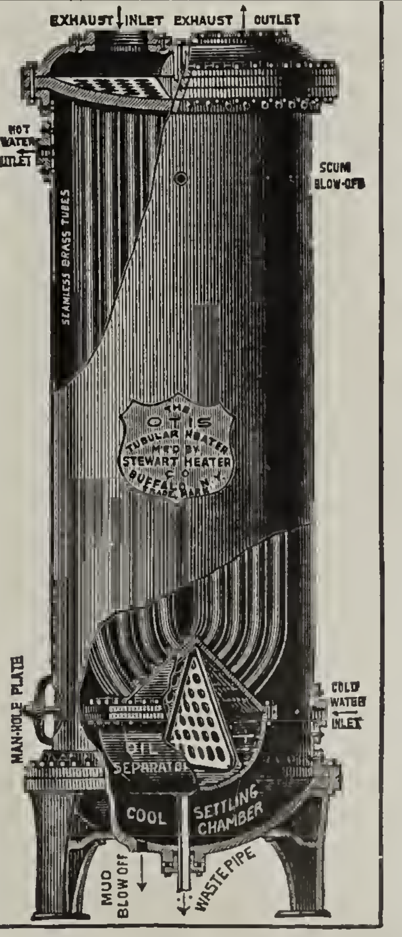

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The Barber Asphalt Paving Co., Des Moines, Ia., tried many different makes and styles of grates, but failed to secure satisfactory results. In April, 1913, they installed their first grateless gravity feed firebox, and it proved so satisfactory that they immediately began the work of installing these fireboxes in all their kilns.

Their letter of July 2nd, tells the results of this step.

Read the Letter

Des Moines, Iowa, July 2nd, 1913.

Grateless Furnace Co., Des Moines, Iowa.

Dear Sirs: We started April 9, 1913, to substitute your grateless gravity feed firebox for the horizontal grate bar. The very first burn exceeded our anticipations, and the Company was so well pleased with the result of the first burn that it authorized the installation of your firebox in all the kilns at this plant. There are 14 kilns on this plant, 10 fireboxes to each kiln, making a total of 140 fireboxes to be changed. The work of remodelling was completed on June 9th.

We consider your firebox a splendid investment for the following reasons:

1st. FUEL ECONOMY. The lowest monthly average of coal used with the horizontal firebox since this plant was first operated, shows an average of 79.2 tons of Marion County, Iowa, lump coal per kiln of paving block per burn. The grateless gravity feed firebox, on the first 8 burns, show an average of 58.6 tons of Marion County, Iowa, lump coal per kiln of paving block per burn—a saving of 20.6 tons (or 26%) of coal per kiln of paving block per burn, or an approximate saving of 410 tons of lump coal per month. This is equivalent to an annual saving in fuel for this plant, when running at full capacity, of approximately $12,000.00.

2nd. REDUCED BURNING TIME. With the horizontal firebox, the average elapsed burning time for a kiln of vitrified paving brick was about 11 days. The burning time with the grateless gravity feed firebox has been reduced to about 9 days—a total reduction in burning time of 2 days, or 17%. This is equivalent to 17% increase in plant capacity as plant capacity is contingent upon the time required to turn a kiln. The new firebox accomplishes complete combustion and therefore does not smoke. Even with 4 kilns (or a total of 40 fireboxes), connected up to one stack, no smoke denser than No. 2 will issue from the stack, and this only at "cleaning time." The fires are cleaned once every 6 hours.

3rd. IMPROVED WARE. Our ware is improved both in quality and appearance. We are getting rattler tests from 3 to 4 points better than with the horizontal grate and our ware now has a lively buckskin color instead of a dull, depressing brown. We attribute the improvement in quality to the even balanced fire which is possible to maintain with the grateless gravity feed firebox.

We have only the highest praise for your firebox and are glad of this opportunity to express it.

Very truly yours,
THE BARBER ASPHALT PAVING COMPANY,
By (Signed) John F. Field,
Superintendent.

GRATELESS FURNACE CO. DES MOINES, IOWA
P. O. Box 685

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The Marion Steam Shovel Co.
Station A Marion, Ohio

in transit, the samples shall be disqualified if there are not remaining ten sound, undamaged brick.

ITEM 5. STORAGE AND CARE OF SAMPLES:—Samples must be carefully handled to avoid breakage or injury. They must be kept in the dry so far as practicable. If wet when received, or known to have been immersed or subjected to recent prolonged wetting, they shall be dried for at least six hours in a temperature of one hundred (100) degrees Fahrenheit before testing.

The Construction of the Rattler.

ITEM 6:—The machine shall be of good mechanical construction, self-contained and shall conform to the following details of material and dimensions, and shall consist of barrel, frame and driving mechanism as herein described. Accompanying these specifications is a complete drawing of a rattler which will meet the requirements, and to which reference should be made.

ITEM 7. THE BARRFL:—The barrel of the machine shall be made up of the heads, headliners, and staves and staveliners. The heads may be cast in one piece with the trunnions, which shall be two and one-half (2½) inches in diameter, and shall have a bearing six (6) inches in length, or they may be cast with heavy hubs, which shall be bored out for two and seven-sixteenths (2 7-16) inch shafts, and shall be key-seated for two keys, each one-half (½) inch by three-eighths (⅜) inch and spaced ninety (90) degrees apart. The shaft shall be a snug fit and when keyed shall be entirely free from lost motion. The distance from the end of the shaft or trunnion to the inside face of the head shall be fifteen and three-eighths (15⅜) inches in the head for the driving end of the rattler, and eleven and three-eighths (11⅜) inches long for the other head, and the distance from the face of the hubs to the inside face of the heads shall be five and one-eighth (5⅛) inches.

The heads shall be not less than three-fourths (¾) of an inch thick, nor more than seven-eighths (⅞) of an inch thick. In outline, each head shall be a regular fourteen-sided (14) polygon inscribed in a circle twenty-eight and three-eighths (28⅜) inches in diameter. Each head shall be provided with flanges not less than three-fourths (¾) of an inch thick and extending outward two and one-half (2½) inches from the inside face of the head to afford a means of fastening the staves. The surface of the flanges of the head must be smooth and give a true and uniform bearing for the staves. To secure the desired true and uniform bearing the surfaces of the flanges of the head must be either ground or machined. The flanges shall be slotted on the outer edge, so as to provide for two (2) three-fourth (¾) inch bolts at each end of each stave, said slots to be thirteen-sixteenths (13-16)) of an inch wide and two and three-fourths (2¾) inches, center to center. Each slot shall be provided with a reecss for the bolt head, which shall act to prevent the turning of the same. Between each two slots there shall be a brace three-eighths (⅜) of an inch thick, extending down the outward side of the head not less than two (2) inches.

There shall be for each head a cast iron headliner one (1) inch in thickness and conforming to the outline of the head; but inscribed in a circle twenty-eight and one-eighth (28⅛) inches in diameter. This headliner shall be fastened to the head by seven (7) five-eighth (⅝) inch cap screws, through the head from the outside. Whenever these headliners become worn down one-half (½) of an inch below their initial surface level at any point of their surface, they must be replaced with new. The metal of these headliners shall be hard machinery iron and should contain not less than one (1) per cent of combined carbon.

The staves shall be made of six (6) inch medium steel structural channels twenty-seven and one-fourth (27¼) inches long and weighing fifteen and five-tenths (15.5) pounds per lineal foot. The staves shall have two holes thirteen-sixteenths (13-16) of an inch in diameter, drilled in each end, the center line of the holes being one (1) inch from the end and one and three-eighths (1⅜) inches either way from the longitudinal center line. The spaces between the staves shall be as uniform as practicable, but must not exceed five-sixteenths (5-16) of an inch.

The interior or flat side of each stave shall be protected by a liner three-eighths (⅜) of an inch thick by five and one-half (5½) inches wide by nineteen and three-fourths (19¾) inches long. The liner shall consist of medium steel plate, and shall be riveted to the channel by three (3) one-half (½) inch rivets, one of which shall be on the center line both ways and the other two on the longitudinal center line and spaced seven (7) inches from the center each way. The rivet holes shall be counter-sunk on the face of the liner, and the rivets shall be driven hot and chipped off flush with the surface of the liners. These liners shall be inspected from time to time, and if found loose shall be at once re-riveted, but no liner shall be replaced by a new one except as the whole set is changed.

Any test at the expiration of which a stave-liner is found detached from the stave or seriously out of position, shall be rejected. When a new set of liners has been placed in position, before being used for testing, the rattler shall be charged with four hundred (400) pounds of shot of the same sizes, and in the same proportions as provided in Item 9, and shall then be run for eighteen thousand (18,000) revolutions at the usual prescribed rate of speed. The shot shall then be removed and a standard shot charge inserted, after which the rattler may be charged with brick for a test.

No set of liners shall be used for more than one hundred (100) tests. The record must show the date when each set of liners goes into service and the number of tests made upon each set.

The staves when bolted to the heads shall form a barrel twenty (20) inches long, inside measurement, between head liners. The liners of the staves must be so placed as to drop between the head liners. The staves shall be bolted tightly to the heads by four (4) three-fourths (¾) inch bolts, and each bolt shall be provided with a lock nut, and shall be inspected at not less frequent intervals than every fifth (5th) test, and all nuts kept tight. A record shall be made after each inspection showing in what condition the bolts were found.

ITEM 8. THE FRAME AND DRIVING MECHANISM:—The barrel shall be mounted on a cast iron frame of sufficient strength and rigidity to support it without undue vibration. It shall rest on a rigid foundation with or without the interposition of wooden plates, and shall be fastened thereto by bolts at not less than four (4) points.

It shall be driven by gearing whose ratio of driver to driven is not less than one (1) to four (4). The counter-shaft upon which the driving pinion is mounted shall not be less than one and fifteen-sixteenths (1 15-16) inches in diameter, with bearings not less than six (6) inches in length. It shall be belt driven, and the pulley shall not be less than eighteen (18) inches in diameter and six and one-half (6½) inches in face. A belt of six (6) inch double-strength leather, properly adjusted, to avoid unnecessary slipping, should be used.

ITEM 9. THE ABRASIVE CHARGE:—The abrasive charge shall consist of cast-iron spheres of two sizes. When new, the larger spheres shall be three and seventy-five hundredths (3.75) inches in diameter and shall weigh approximatly seven and five-tenths (7.5) pounds (3.40 kilos) each. Ten (10) spheres of this size shall be used. These shall be weighed separately after each ten (10) tests, and if the weight of any large sphere falls to seven (7) pounds (3.175 kilos) it shall be discarded and a new one substituted; provided, however, that all of the large spheres shall not be discarded and substituted by new ones at any single time, and that so far as possible the large spheres shall compose a graduated series in various stages of wear.

When new, the smaller sized spheres shall be one and eight hundred seventy-five thousandths (1.875) inches in diameter and shall weigh approximately ninety-five-hundredths (.95) pounds (0.43 kilos) each. In general, the number of small spheres in a charge shall not fall below 245 nor exceed 260. The collective weight of the large and small spheres shall be as nearly as possible three hundred (300) pounds. No small sphere shall be retained in use after it has been worn down so that it will pass a circular hole one and seventy-five hundredths (1.75) inches in diameter, drilled in iron plate one-fourth (¼) inch in thickness, or weigh less than seventy-five hundredths (.75) of a pound (or .34 kilos). Further, the small spheres shall be tested by passing them over the above plate, or shall be weighed after every ten (10) tests, and any which pass through or fall below the specified weight, shall be replaced by new spheres, and provided, further, that all of the small spheres shall not be rejected and replaced by new ones at any one time, and that so far as possible the small spheres shall compose a graduated series in various stages of wear. At any time that any sphere is found to be broken or defective it shall at once be replaced.

The iron composing these spheres shall have a chemical composition within the following limits:

Combined carbon	Not less than 2.50 per cent
Graphite carbon	Not more than 0.25 per cent
Silicon	Not more than 1.00 per cent
Manganese	Not more than 0.50 per cent
Phosphorus	Not more than 0.25 per cent
Sulphur	Not more than 0.08 per cent

For each new batch of spheres used, the chemical analysis must be furnished by the maker or be obtained by the user, before introducing into the charge, and unless the analysis meets the above specifications, the batch of spheres shall be rejected.

The Operation of the Test.

ITEM 10. THE BRICK CHARGE:—The number of brick per test shall be ten (10) for all bricks of so-called "block size," whose dimensions fall between from eight (8) and nine (9) inches in length, three (3) inches and three and three-fourths (3¾) inches in breadth, and three and three-fourths (3¾) inches and four and one-fourth (4¼) inches in thickness.* No brick should be selected as part of a regular test that would be rejected by any other requirements of the specifications under which the purchase is made.

ITEM 11. SPEED and DURATION OF REVOLUTION:—The rattler shall be rotated at a uniform rate of not less than

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* Where brick of larger or smaller sizes than the dimensions given above for blocks are to be tested, the same number of bricks per charge should be used, but allowance for the difference in size should be made in setting the limits for average and maximum rattler loss.

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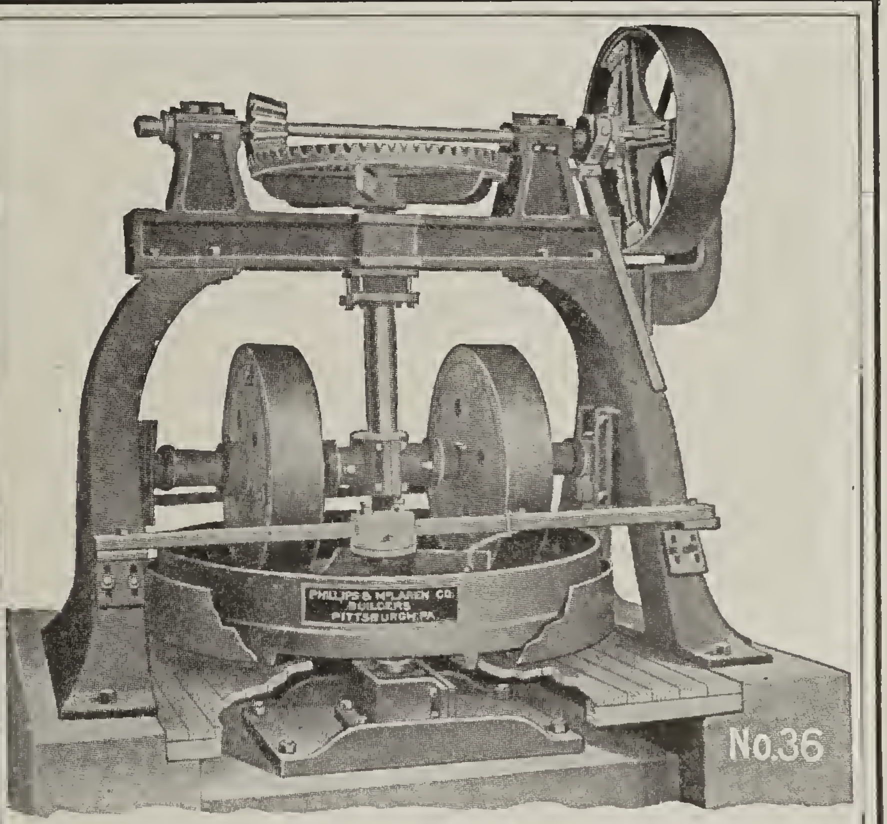

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twenty-nine and one-half (29½) nor more than thirty and one-half (30½) revolutions per minute, and eighteen hundred (1800) revolutions shall constitute the test. A counting machine shall be attached to the rattler for counting the revolutions. A margin of not to exceed ten (10) revolutions will be allowed for stopping. Only one (1) start and stop per test is generally acceptable. If from accidental causes, the rattler is stopped and started more than once during a test, and the loss exceeds the maximum permissible under the specifications, the test shall be disqualified and another made.

ITEM 12. THE SCALES:—The scales must have a capacity of not less than three hundred (300) pounds, and must be sensitive to one-half of an ounce, and must be tested by a standard test weight at intervals of not less than every ten (10) tests.

ITEM 13. THE RESULTS:—The loss shall be calculated in percentage of the initial weight of the brick composing the charge. In weighing the rattled brick, any piece weighing less than one (1) pound shall be rejected.

ITEM 14. THE RECORDS:—A complete and continuous record shall be kept of the operation of all rattlers working under these specifications. This record shall contain the following data—concerning each test made:

1. The name of the person, firm or corporation furnishing each sample tested.
2. The name of the maker of the brick represented in each sample tested.
3. The name of the street, or contract which the sample represented.
4. The brands or marks upon the bricks, by which they were identified.
5. The number of bricks furnished.
6. The date on which they were received for test.
7. The date on which they were tested.
8. The drying treatment given before testing, if any.
9. The length, breadth and thickness of the bricks.
10. The collective weight of the 10 large spherical shot used in making the test at the time of their last standardization.
11. The number and collective weight of the small spherical shot used in making the test, at the time of their last standardization.
12. The total weight of the shot charge after its last standardization.
13. Certificate of the operator that he examined the condition of the machine as to staves, liners, and any other parts affecting the barrel, and found them right at the beginning of the test.
14. Certificate of the operator of the number of charges tested since the last standardization of shot charge.
15. Certificate of the operator of the number of charges tested since the stave liners were renewed.
16. Certificate of the operator that the requisite number of revolutions were made, under the prescribed conditions, upon the staves after the last relining, before a brick test was made.
17. The time of the beginning and ending of each test, and the number of revolutions made by the barrel during the test as shown by the indicator.
18. Certificate of the operator as to number of stops and starts made in each test.
19. The initial collective weights of the ten bricks composing the charge and their collective weight after rattling.
20. The loss calculated in per cents of the initial weight; and the calculation itself.
21. The number of broken bricks and remarks upon the portions which were included in the final weighing.
22. General remarks upon the test and any irregularities occurring in its execution.
23. The date upon which the test was made.
24. The location of the rattler and name of the owner, upon which the test was made.
25. The certificate of the operator that the test was made under the specifications of the American Society For Testing Materials and that the record is a true record.
26. The signature of the operator or person responsible for the test.
27. The serial number of the test.

In event of more than one copy of the record of any test being required, they may be furnished on separate sheets, and marked duplicates, but the original record shall always be preserved intact and complete.

For the convenience of the public, the following blank form, which provides space for the necessary data, is furnished, and its use recommended:

Acceptance and Rejection of Material.

ITEM 15. BASIS OF ACCEPTANCE OR REJECTION:—Paving bricks shall not be judged for acceptance or rejection by the results of individual tests, but by the average of no less than five tests. Where a lot of bricks fail to meet the required average, it shall be optional with the buyer whether the bricks shall be definitely rejected or whether they may be regraded and a portion selected for further test as provided in Item 16.

ITEM 16. RANGE OF FLUCTUATION:—Some fluctuation in the results of the rattler test, both on account of variations in the bricks and in the machine used in testing are unavoidable and a reasonable allowance for such fluctuations should be made, wherever the standard may be fixed.

In any lot of paving brick, if the loss on a test computed upon its initial weight exceeds the standard loss by more than two per cent., then the portion of the lot represented by that test shall at once be resampled and three more tests executed upon it, and if any of these three tests shall again exceed by more than two per cent the required standard, then that portion of the lot shall be rejected.

If in any lot of brick, two or more tests exceed the permissible maximum, then the buyer may at his option reject the entire lot, even though the average of all the tests executed may be within the required limits.

ITEM 17. FIXING OF STANDARDS:—The percentage of loss which may be taken as the standard, will not be fixed in these regulations, and shall remain within the province of the contracting parties. For the information of the public, the following scale of average losses is given, representing what may be expected of tests executed under the foregoing specifications:

For brick suitable for heavy traffic: General average loss, 22 per cent.; maximum permissible loss, 24 per cent. For brick suitable for medium traffic; General average loss, 24 per cent; maximum permissible loss, 26 per cent. For brick suitable for light traffic: General average loss, 26 per cent; maximum permissible loss, 28 per cent.

Which of these grades should be specified in any given district and for any given purpose is a matter wholly within the province of the buyer, and should be governed by the kind and amount of traffic to be carried, and the quality of paving bricks available.

ITEM 18. CULLING AND RETESTING:—Where, under items 15 and 16, a lot or portion of a lot of brick is rejected, either by reason of failure to show a low enough average test or because of tests above the permissible maximum, the buyer may at his option permit the seller to regrade the rejected brick, separating out that portion which he considers at fault and retaining that which he considers good. When the regrading is complete, the good portion shall be then resampled and retested, under the original conditions, and if it fails again, either in average or in permissible maximum, then the buyer may definitely and finally reject the entire lot or portion under test.

ITEM 19. PAYMENT OF COST OF TESTING:—Unless otherwise specified, the cost of testing the material as delivered or prepared for delivery, up to the prescribed number of tests for valid acceptance or rejection of the lot, shall be paid by the buyer. (See also Item 23.) The cost of testing extra samples made necessary by the failure of the whole lot or any portion of it, shall be paid by the seller, whether the material is finally accepted or not.

Visual Inspection.

It shall be the right of the buyer to inspect the bricks, subsequent to their delivery at the place of use, and prior to or during laying, to cull out and reject upon the following grounds:

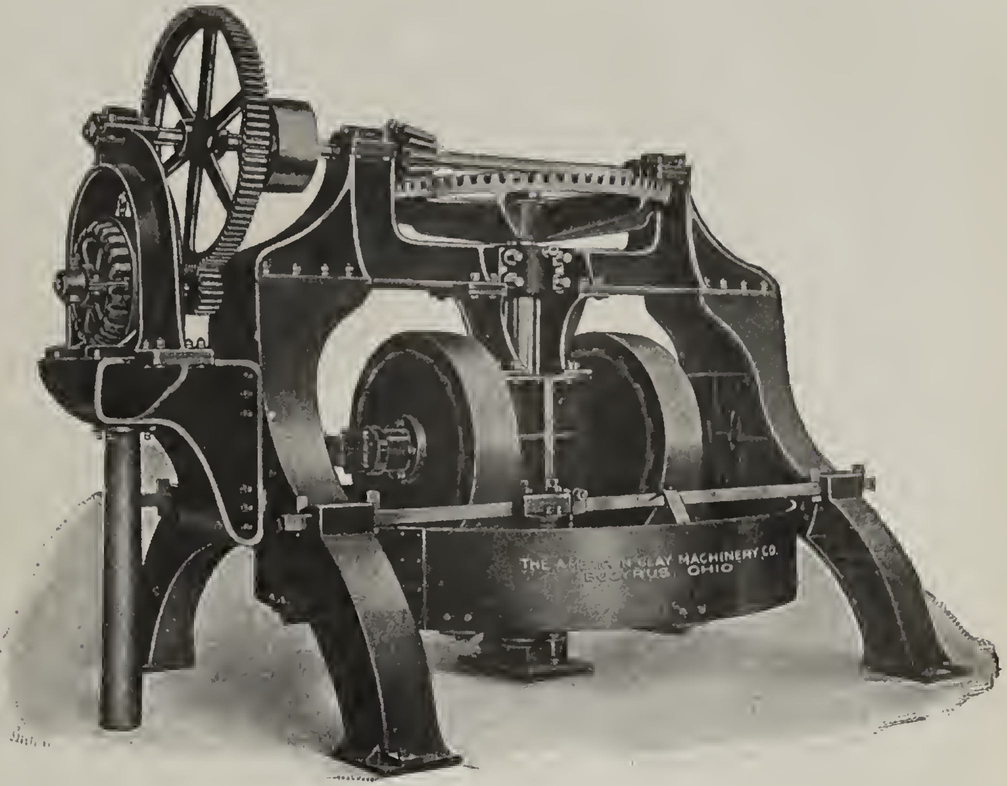
ITEM 20.—All bricks which are broken in two or chipped in such a manner that neither wearing surface remains intact, or that the lower or bearing surface is reduced in area by more than one-fifth. Where brick are rejected upon this ground, it shall be the duty of the purchaser to use them so far as practicable in obtaining the necessary half bricks for breaking courses and making closures, instead of breaking otherwise whole and sound brick for this purpose.

ITEM 21.—All bricks which are cracked in such a degree as to produce defects such as defined in Item 20, either from shocks received in shipment and handling, or from defective conditions of manufacture, especially in drying, burning or cooling, unless such cracks are plainly superficial and not such as to perceptibly weaken the resistance of the brick to its conditions of use.

ITEM 22.—All bricks which are so off-size, or so misshapen, bent, twisted or kiln marked, that they will not form a proper surface as defined by the paving specifications, or align with other bricks without making joints other than those permitted in the paving specifications.

ITEM 23.—All bricks which are obviously too soft and too poorly vitrified to endure street wear. When any disagreement arises between buyer and seller under this item, it shall be the right of the buyer to make two or more rattler tests of the brick which he wishes to exclude, as provided in Item 2, and if in either or both tests, the bricks fall beyond the maximum rattler losses permitted under the specifications, then all bricks having the same objectionable appearance may be excluded, and the seller must pay for the cost of the test. But if under such procedure, the bricks which have been tested as objectionable, shall pass the rattler test, both tests falling within the permitted maximum, then the buyer cannot exclude the class of material represented by this test and he shall pay for the cost of the test.

ITEM 24.—All bricks which differ so markedly in color from the type or average of the shipment, as to make the resultant pavement checkered or disagreeably mottled in appearance. This item shall not be held to apply to the normal variations in color which may occur in the product of one plant among bricks which will meet the rattler test as referred to in items 15, 16, 17, but shall apply only to differences of color which imply differences in the material of which the bricks are made, or extreme differences in manufacture.



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The Clay Machinery Folks of the United States and Akron, O.

Big Good Roads Associations Sign Official Call for Convention

Twenty-four of the foremost organizations interested in good roads and the development of farm life have signed the Official Call for the Third American Road Congress to be held at Detroit, Mich., during the week of September 29. The call sums up in the following clear cut and impressive paragraphs the good roads situation throughout the United States and the reasons which actuate the holding of this great national convention:

WHEREAS, the rapid concentration of population in our large cities and the high cost of living are, in a considerable measure, due to bad roads which render farms inaccessible, transportation uncertain and costly, educational advantages limited, and social conditions unattractive; and

WHEREAS, it is estimated that the people of this country are annually expending on the public roads upwards of $200,000,000, a large percentage of which, by reason of lack of system, ignorance of proper methods, and wasteful management, is not accomplishing results at all commensurate with the outlay; and

WHEREAS, the National Government and the various state governments are now endeavoring to ascertain the character of legislation which will best accomplish a maximum of effective road improvement and maintenance coupled with a wise and efficient expenditure of the road revenues; and

WHEREAS, the increasing use of the motor vehicle has brought about problems of construction and maintenance of roads which are exceedingly difficult and for the solution of which the combined wisdom and experience of trained specialists are necessary; and

WHEREAS, the aroused public spirit of the people in behalf of the movement for better roads has found expression in the form of many organized bodies; and

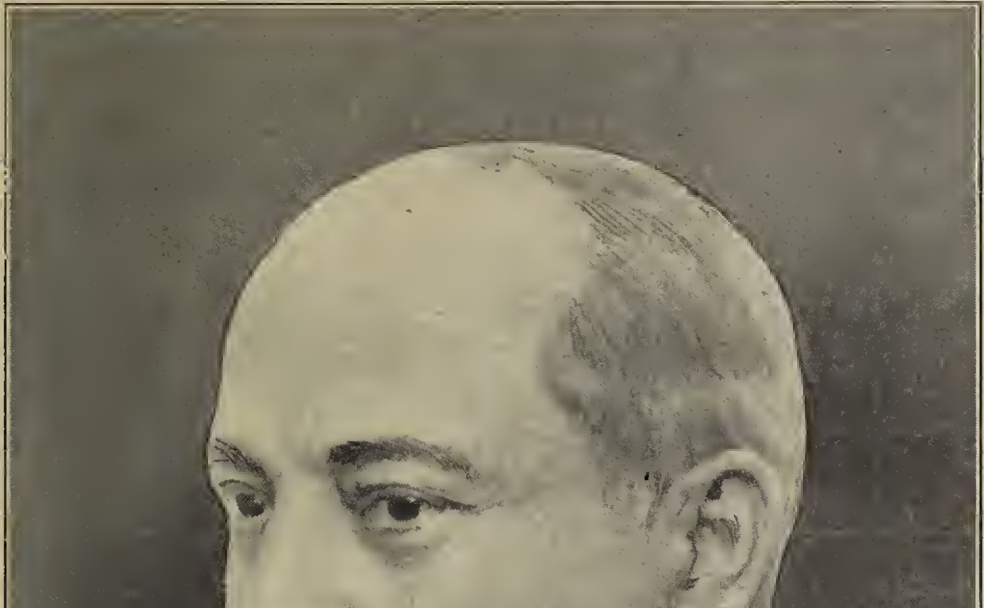
WHEREAS, it is only by a correlation and coordination of efforts, and by an exchange of knowledge and experience that the greatest good can be accomplished;

THEREFORE, we, the undersigned, representing the organized road movement of America, hereby join in calling the American Road Congress to hold its sessions in the city of Detroit, State of Michigan, during the week of September 29, for the purpose of giving careful consideration to the subjects of road legislation, both national and state; the administration of public roads throughout America including states, counties, and the smaller subdivisions thereof, and the provinces of Canada; the problems of construction and maintenance; the financial questions concerned with road revenues and their expenditures; the advancement of highway engineering in educational institutions; and other questions, the consideration of which may be of practical aid to the betterment of the public roads of America.

American Highway Association.
American Automobile Association.
National Grange, Oliver Wilson, Master.
National Old Trails Association.
Travelers Protective Association.
Quebec- Miami International Highway Association.
Omaha-Lincoln-Denver Good Roads Association.
Southern Appalachian Good Roads Association.
Arizona Good Roads Association.
Arkansas Good Roads and Drainage Association.
Greater Colorado Highway Association.
Georgia Federation of Road Authorities.
Illinois Highway Improvement Association.
Indiana Good Roads Association.
Kansas State Good Roads Association.
Kentucky Good Roads Association.
Michigan State Good Roads Association.
Minnesota Roadmakers' Association.
New York Roadbuilders' Association.
North Carolina Good Roads Association.
Ohio Good Roads Federation.
Virginia Road Builders' Association.
West Virginia Board of Trade.
Wisconsin Highway Commissioners Association.

SPECIAL FEATURE—REINFORCED BRICK WALLS CHEAPER THAN CONCRETE

BRICK and CLAY RECORD



THEODORE A. RANDALL

SECRETARY NATIONAL BRICK MANUFACTURERS' ASS'N

ssified Ads Pages 624-626

CHICAGO, SEPTEMBER 15, 1913

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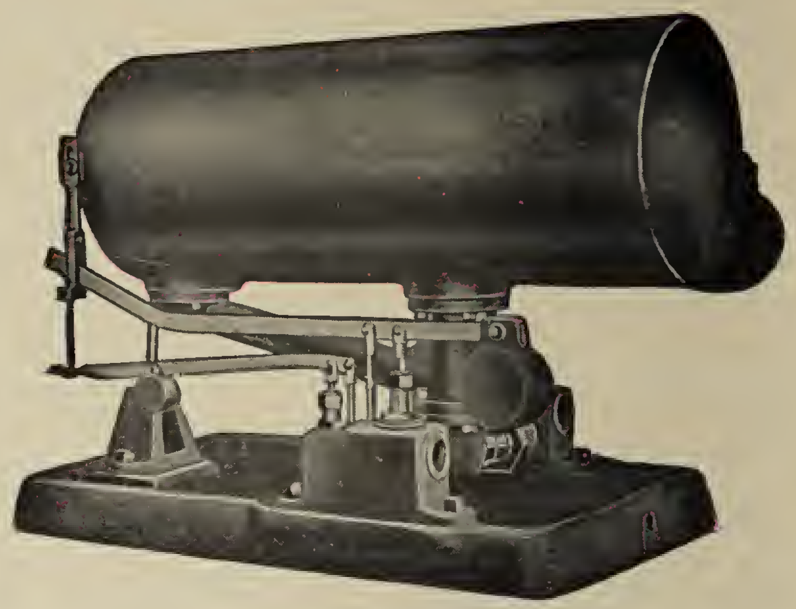

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BRICK and CLAY RECORD

Volume XLIII CHICAGO, SEPTEMBER 15, 1913 Number 6

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The Editor's Corner

A Department Wherein is Set Apart Comment
and Opinions on Some of the Graver Problems
Confronting the Clayworker and Co-Laborers

THE manufacturer is an under dog with the lawmakers of the Nation. The cry, "Give the working man a chance," should be changed to, "Give the manufacturer a chance." Labor is permitted to form combinations—to organize into trusts, to regulate the price of its product. The physician is permitted to enter into an agreement with others in his profession and to set a fixed minimum scale of prices. The architect, the contractor, and several other classes are allowed to form combinations and to enter into an understanding.

The manufacturer, however, is held in check by the Sherman anti-trust law. He is bound hand and foot. If he deems it wise, conservative business sense to do just what labor has done and is doing, he is declared a criminal and so treated.

The Sherman law and the way it is interpreted is unjust. It means class legislation. It places the manufacturer at a disadvantage. It should be repealed. Business should be given an opportunity.

Congress made a start in the right direction when it placed the railroads under Federal regulation. It should go further and place Labor and Capital and the business of the Nation under the same protecting care.

Manufacturers OUGHT to be able to say: "We pay so much for raw material. We pay so much for labor. We pay so much for freight—so much for manufacture. We should be permitted to fix a FAIR profit and have an UNDERSTANDING as to the selling price for a certain period, just as the RAILROADS are permitted to do today—just as LABOR is allowed to do." If it is fair to the others why not to the manufacturer?

The present system is antiquated. Everyone is cutting the other fellow's throat. Competition IS the LIFE of trade—that is true, but unfair competition also is the DEATH.

Let a set or group of business men in any certain line enter into an agreement as to prices. Let this agreement be in the form of a contract that would have a STANDING in a Federal court and that court given the power to ENFORCE that contract. Make it just as criminal for a business man to break his agreement—to cut prices or give rebates, as it is for a railroad to give a secret rebate.

Place Labor on the SAME basis. Let a commission determine what is and should be a fair wage scale. Then make the contract between Capital and Labor one of STANDING in a Federal court and that court empowered to ENFORCE it.

This would mean a REGULATED business —a CONSERVATIVE business. The contracts could be made for a year or two years or even three years. Business would know for a certainty what to expect at least for that period. Labor also would know. Unfair competition, secret rebates, graft and all the other present-day evils would disappear.

Until the railroads were placed under Federal regulation bankruptcy stared them in the face. The secret rebate system was throttling the very life of the big shipping interests. Federal regulation has saved the railroads. Secret rebates are a thing of the past. It is criminal to give rebates. Men do not wish to run the risk of spending a term of years in prison. The law has made the dishonest railroad official honest.

Business men in general, seeing the effectiveness of Federal regulation with the railroads, want to be given the same treatment. They want the entire Nation put on a sane, conservative, businesslike basis.

* * *

An Iowa brickmaker spent $2.50 in a newspaper advertisement and sold enough brick to build three houses.

* * *

Every time you cast a vote for the chief executive of the Nation or for your village constable you are practicing the doctrines of the "Get-together Spirit," in joining hands with your fellow voters to select an official that will best serve your interests. Why not do a little similar organizing in your business affairs?

WHAT support are you, Mr. Clayworker, INDIVIDUALLY giving the various organizations that are working to put YOUR plant on a paying basis? If NONE, what excuse do you make to yourself, when you give the matter a thought? If only HALF-HEARTED, is the excuse you make yourself for not doing MORE, an excuse that you would be willing to receive from one of your employes, if he were found to be SHORT-SIGHTED or CARELESS of your interests?

You know that in those branches of the industry where support HAS been given to associations of employers, small investments have grown into great business enterprises—enterprises large enough to appear before Tariff Committees and DEMAND that present prosperity be left unchanged.

You know that even the small measure of support given another branch of the clayworking industry has given an impetus to the use of its product that ASSURES an IMMEDIATE profit and PROMISES an ever-increasing demand.

The BUILDING of these organizations was the work of a FEW men, who saw far enough ahead to realize that co-operation meant SUCCESS and division of interests FAILURE.

Yet the early history of these associations was marked by a pitiable lack of interest, a disheartening lack of support and a petty, mean and uninspiring suspicion directed against those who, laying aside their personal prejudices, worked for the COMMON GOOD of their own investments and those of their competitors.

How much tact, how much self-effacement, how much time, money and thought these men gave their fellow-workers, before the doubtful ones saw a GREAT LIGHT and came into the fold, no one but those who were MAKING HISTORY will ever know.

Yet the present success of the branches of the clayworking industry in which they were LEADERS would have been altogether lacking, had they not planned and thought and worked and GONE AFTER the selfishly blind, hard-to-find and harder to convince, men who could not or would not see that anything could be INDIVIDUALLY gained by MUTUAL HELP.

If, in that part of the industry in which you are working, an organization is being effected, —and in what branch is there none?—are you going to be ONE of those who sit IDLY by, while others try to work out your salvation?

Are you one of the MANY who, by waiting for the ENTHUSIASM of some big meeting, or the personal SOLICITATION of some co-worker, are putting brakes on the wheels of progress?

Do you realize that YOUR lack of support is, perhaps, the excuse two, or three, or a dozen others are giving, for not HELPING you and themselves?

Do you realize that the time wasted in an effort to get you to aid in this work should be utilized in the REAL WORK that the organization can and should be doing, for you?

Or, if you have "joined" are you resting content with the mere payment of dues? You know what would happen to your club, your lodge or your church, if its members contented themselves with making PALTRY contributions and only turned out for "stags," "third degrees" and "oyster suppers."

The man who said "I am only a 'high private'—let the other fellows do the work and get the credit," was, beyond the shadow of doubt, a clayworker.

It is all right to be "busy around the plant" and, by inference, intimate that the men whose names are enrolled as officers of an association that is working to make your plant a paying one, have plenty of time to give to that delectable occupation.

But if each of them—each of the men you "honor" with an office once a year, at some convention,—did not find time to keep their own business running and, at the same time, find time to give to the work that is helping you to a wider market for your product and a surer margin on your sales, it might be, that in some "off" year, the phrase "there is a note coming due" would be much more frequent in your office than "we ought to declare a dividend."

What support are you, Mr. Clayworker, giving individually?

* * *

An open price policy in any community throttles unfair competition and regulates business.

* * *

No man knows so much he cannot learn more. Even a Ten Cents' pamphlet may contain more information on one page than we have absorbed in years of practical experience.

T. A. Randall—A Man Who Has Made Clay Product History

A Few Words Regarding the Achievements of a Tireless Worker and an Ever-Ready Booster of Burned Clays, Who Has for Twenty-seven Consecutive Years Guided the Destinies of the National Brick Manufacturers Association as its Secretary In Preparing this Biographical Sketch "Brick and Clay Record" Felt that no One Was Better Equipped to Write it than Mr. Gates who, besides Possessing a Ready Pen, Knows the Subject Better than Any Other Living Man

Written by W. D. Gates

President of the Gates Potteries and a Life-Long Friend of the Subject

FOR a great many years I have been waiting to write Randall's obituary —not anxiously, not nervously waiting, but just waiting. Many persons consider him to be a quick, active, prompt man. I do not say fast but, anyway, effective. To my mind, thus waiting to begin writing, and to write it right, he has been slow in doing his part. It absolutely was necessary that he act first, or at least cease to act. It would be mighty awkward to have him criticize the obituary after I had it published. I had all the data of his birth and those other things necessary, and sometimes I have thought that even I could arrange the date of his death myself. Really, and candidly, I believe, also, he has been waiting to write mine, so it has been a waiting game for us both.

Recalling the adage, "I care not what kind of a life a man may have lived so long as I can write his biography," I seize upon the chance and go to it.

Theodore "Allright" Randall first saw the light of day on June 11, 1857. This is strictly confidential, as he still poses as a young man, excepting when in the immediate presence of his granddaughter. Very early in life he began showing strong business tendencies, and, after dallying a short time in the dairy business, took up mud pies and clay marbles. Afterward, having touched lightly on machinery, for which he had no feeling, he swung all the ardor of his young life and strong personality into the insurance business. He knew he had the "goods" and he was there to sell them.

It is claimed, so earnest was he in this work, that when unable to detain a living subject, he would even talk life insurance to the wooden cigar store Indians, and they stood speechless, unable to dispute.

That he quit this business was, in no way Theodore's fault but rather that of his friends. None of Theodore's friends figured on dying or expected to die and, consequently would not consider life insurance. They did not, in fact, consider themselves as subjects, so "Teddy," not wishing to make too radical a change this time, went from the INSURANCE business into the ASSURANCE business, sometimes known as the NEWSPAPER business. This was in 1884. At that time there were a few of us that knew a great deal about clay but there was nothing in print about it—absolutely no clay literature. It was only by great effort that we, the "WISE Ones," could hold all we knew. We were supercharged, as it were. Theodore instantly recognized this situation and the pressing need of a receptacle for all this concentrated wisdom and, becoming an editor, he threw open the pages of his journal and these were seized by us with avidity to the extent that now, at the present writing, everything known about clay is in print, and we, the former "WISE Ones," absolutely are empty and know nothing at all about it. Possibly I should mention, incidentally, that Theodore does not either, and never did, but this is perfectly proper as it is well known that an editor does not have to and is not expected to know anything, but simply uses his shears and a pump.

But enough of these dry statistics. To come to lighter subjects: In 1886 Theodore and several of us young men, or possibly I should say several of us young men and Theodore, having worn out all our intimate friends telling them what we knew, assembled at Cincinnati and proceeded to tell each other. It was a great success. We had the time of our lives. Theodore grasped the opportunity and, leading us aside, one by one, he assured us that we were wonders. He expressed his surprise that our heads held so much, that it hadn't spilled out on the journey and thus swelled each one of us up until the void left by the wisdom we had unloaded was not discernable. Theodore developed and used the "Glad Hand" method, since imitated but never excelled. This led to repetitions of the occasion and many more conventions and Theodore printed the proceedings. Then we would return to our homes so swelled that, by the time we had returned to speaking terms with our families, Theodore's paper would come out with our pictures in it, coupled with what "Miss Addie" had construed as what we said, or should have said, whereat we showed them to our families and friends and again "went up in the air" to higher altitudes.

Really, Theodore has accomplished great things. He has gotten us together and held us. His glad hand has held us. Had there been no Theodore I doubt there would have been any National Brick Manufacturers' Association. There are not many who could do it, but he could and, in the language of the poet, "He seen his chanst and he done it."

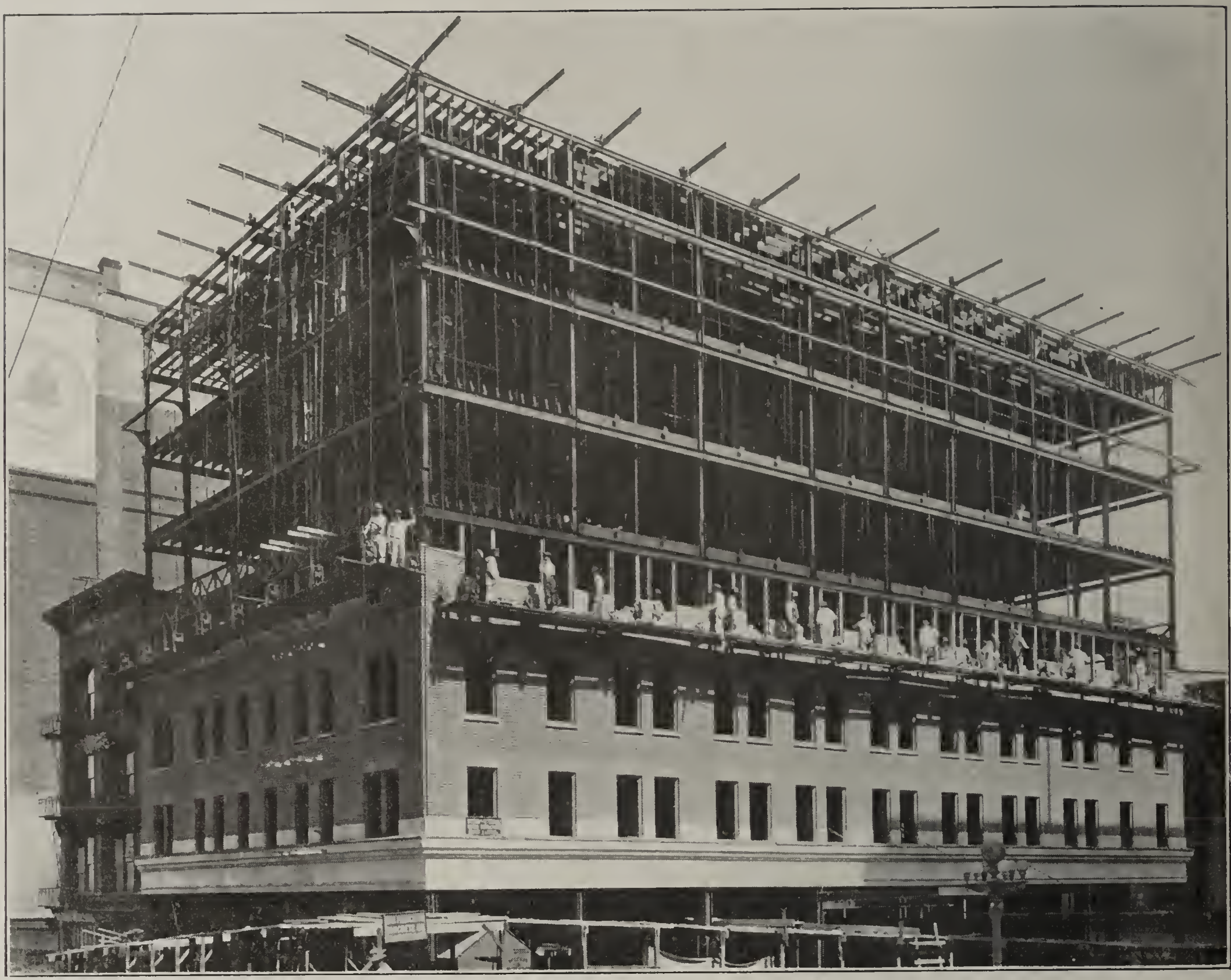
It has not been all plain sailing for him by any manner of means. We were an unruly crowd, jealous and mistrustful, and we needed just such a man and, candidly, I believe Theodore needed us, too.

In the building up of the business to an art and in the making and cementing of friendly feelings between manufacturers, History will write the name of "Our Teddy" in large letters, while he is already firmly enshrined in the hearts of the multitude of his friends.

* * *

The second article by Elbert Hubbard will appear in October 2 issue of this journal. Mr. Hubbard again chooses as his subject the non-reading clayworker and in his usual snappy, pointy way, he drives home the lesson he seeks to teach.

Reinforced Brick is



Fleishacker Building, San Francisco, Cal. F. H. Meyers, Architect,

Steel Frame and Reinforced Brick Curtain Walls, eight inches thick.

CALIFORNIA SONS OF PIONEERS SHOW FALLACY OF CONCRETE CLAIMS BY USING BETTER CONSTRUCTION AT LOWER COST

The chief argument of the cement man for the use of reinforced concrete in office building and sky-scraper construction is its CHEAPNESS. Brick and steel admittedly is better, so they say. Out in San Francisco it is shown by actual practice that reinforced brick construction with steel frame —the very height of building efficiency, is really cheaper than reinforced concrete with its attendant evils. This article presents the facts in a comprehensive, convincing manner.

THE intense interest in studying proper methods of construction, shown not only by architects, builders and owners but by the general public, is one of the most encouraging features in the present unrest which seems to prevail in building circles. Brick has nothing to fear from the most rigid investigation, in fact it courts inquiry, and past experience demonstrates that study of its merits and adaptability for varied uses leads to its more general use.

In the entire United States, brick has no heartier advocate than Nathaniel Ellery, a well known civil engineer of San Francisco and manager of the Brick Builders' Bureau, who is widely known as an expert in modern building methods. As a result of his engineering experience, Mr. Ellery has become convinced that the popularity of other materials than brick for above-ground construction has little basis in the comparative merit or ultimate cost of the materials. Time, he says, will certainly demonstrate the superiority of clay products for its fireproof qualities and from the standpoint of general durability.

Brick went flying at the heads of the concrete interests when Nathaniel Ellery, manager of the Brick Builders' Bu-

Cheaper Than Concrete

Here is the Proof In a Nutshell:

The two photographs reproduced at the right show the fallacy of the claims made for concrete construction. According to these two exhibits concrete not only is an inferior form of construction, but a more expensive one, figured from first cost as well as durability. Note these facts:

Exhibit No. 1. Brick Reinforced Wall on Steel Frame

The picture at the top on the right of this page is a reinforced brick wall, eight and a half inches thick, built on a steel frame in an eight-story building.

Cost Per Square Foot of Surface . . 25c.

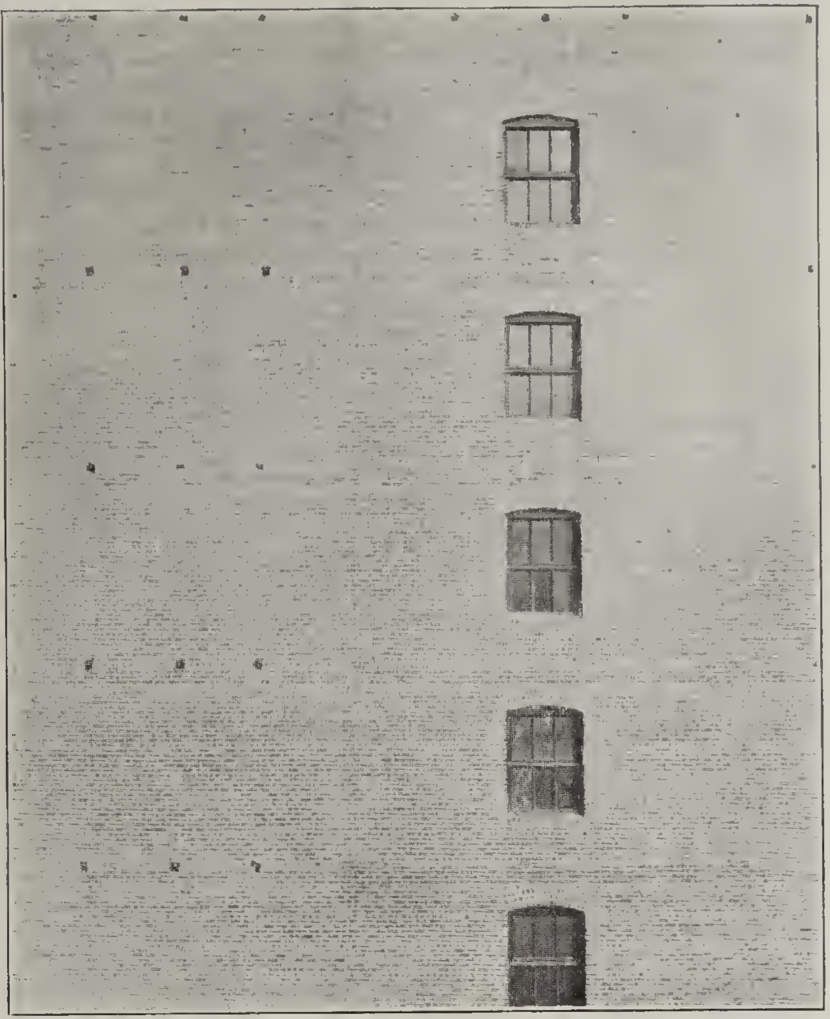
Exhibit No. 2. Concrete Reinforced Wall on Steel Frame

The picture at the bottom on the right of this page is a reinforced concrete wall, six inches thick, built on a steel frame in a nine-story building.

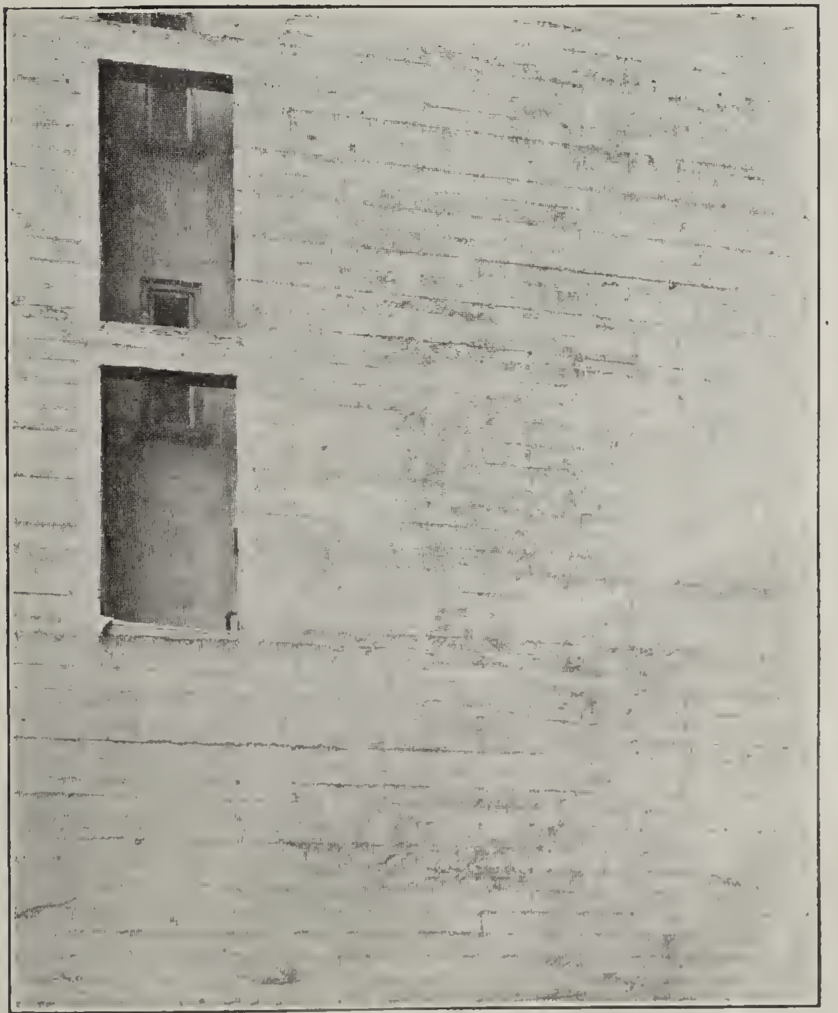
Cost Per Square Foot on Steel Frame 35c.

Summarizing, the owner who used the reinforced brick construction got a better wall—a more durable wall—a far more sightly wall, and got it 10 cents per square foot cheaper than the owner who used reinforced concrete, who got for his greater price an unsightly wall and one that, in the face of statistics is apt to chip, to crack, to crumble and disintegrate and to prove an endless bill of expense.

Why Use Concrete?



Reinforced Brick Wall on Steel Frame Eight-Story Building. Wall Eight and One-Half Inches Thick. Cost to Owner, 25 Cents a Square Foot of Surface.



Reinforced Concrete Wall on Steel Frame Nine-Story Building. Wall Six Inches Thick. Cost to Owner, 35 Cents a Square Foot of Surface.

reau, delivered the first of six lectures on "Building Construction," before a gathering of the Insurance Society of America in San Francisco. The society of insurance men had expressed a desire to hear a discussion of present building construction as far as it concerned fire resistance, and Mr. Ellery outlined a series of talks that places the fire and earthquake resistance of brick as opposed to concrete in a very clear light, his idea being to treat the matter from a practical rather than a technical point of view.

In his first lecture, Mr. Ellery dealt with foundation work and its relation to the main part of the structure, other forms of building construction being reserved for the five subsequent lectures. He laid great stress on the superior quality of steel and brick for building, steel being the most rigid of all building materials and brick the most nearly fireproof; hence, by combining the two, the best and most durable structures result. This combination has been shown to be the best earthquake-resisting as well as the best fire-resisting type of construction. As exemplifying the weakness of reinforced concrete, Mr. Ellery instanced the fact of the wrecking of a reinforced concrete structure by a slight earthquake shock only a year ago. The second of Mr. Ellery's lectures was devoted largely to a comparison of the use of brick and concrete above the ground line. He showed the futility of using concrete in the outer walls of buildings and demonstrated the superior quality of brick in this regard.

A study of the question shows that much well directed advertising has placed concrete in a favorable light before the public as a material adaptable for the construction of every type of building. Much experimenting and discussion has been carried on and still it remains a material in need of much well ripened judgment in its use. Failures are occurring without end, creating losses of life and property. In the face of this you find advocates demanding even lighter work.

The making of concrete is a chemical process and needs care and attention, but usually the cheaper labor is employed to mix and deposit the material. This mistake is a serious setback to the material and those people permitting of flimsy, skinned concrete construction are positively jeopardizing future work.

NATHANIEL ELLERY
M. Am. Soc. C. E.

Problems in Concrete Construction.

One of the most common failures of concrete building is occasioned by its failure to sufficiently protect the reinforcing metal. In discussing this phase of the question, an authority on building says:

"The imbedded metal of reinforced concrete must be protected from excessive heat, so that the structure shall not fail. After calculating a column, beam or slab and placing the metal of reinforcement near the tension side, or the side liable to be stressed with tension, there should be at least two inches of concrete as a fire protection. This extra concrete should be beyond and over the figured cross section of the member, for should a fire or conflagration attack the member, dehydration and spalling will occur for the two-inch depth. Then how shall we replace this destroyed surface? We who have experienced the difficulty of attaching new concrete to old know what it means to repair such material or make the proper junction of the new and old concrete. Understand when dehydration takes place it is a chemical breaking down of the real strength of the concrete mass. Undoubtedly in first-class construction reinforced concrete should receive proper fire protection. In the minds of many, whenever a material is non-combustible there seems to be immediately established the idea that it is fireproof.

"Fireproof does not simply mean that a material will not burn, but that in addition it is a protector against fire. Frequently one will notice the label of fireproof on a building when, in fact, it is not much better than a firetrap. Modern fireproofing in building construction has reached that stage where all materials are so arranged as to assist in warding off fire from nearly every point of attack. The structural parts are surrounded with a resistant material, windows are in metal casing, wire glass is used, doors are metal, the trim is metal, elevator shafts are enclosed, hallways are protected by fire doors and the whole plan tends to limit an interior fire to a certain unit. Today after looking over our enormous fire losses it seems almost incredible to think of erecting buildings, the walls of which are either brick or concrete and the interior is of wood. The certain test will come upon this improper fireproofed building and then will much criticism be heard of the construction, when at this date those who have at all studied the problem are sure of their ground.

"The ordinary fire develops between 1,500 and 2,000 degrees F. of heat. Concrete dehydrates between 500 and 1,000 degrees F. As the heat penetrates the mass, it loses its intensity, and yet with a wooden interior which means in case of fire an intense heat, the walls will be destroyed. Should the brick walls be properly constructed the wood may burn out without destruction to the brick, as it is a material not deteriorated by the heat and such a fire. With such construction we must build our real fireproof buildings doubly well in order to resist the outside hazard.

"The most inconsistent thing done in building is to erect large concrete warehouses and store buildings to hold much inflammable material without properly fireproofing the concrete, and then labeling the building fireproof. Again, in erecting power houses of reinforced concrete where electricity is generated or used, provision should be made to avoid possible electrolytic action in damp concrete.

Highest Type of Structure.

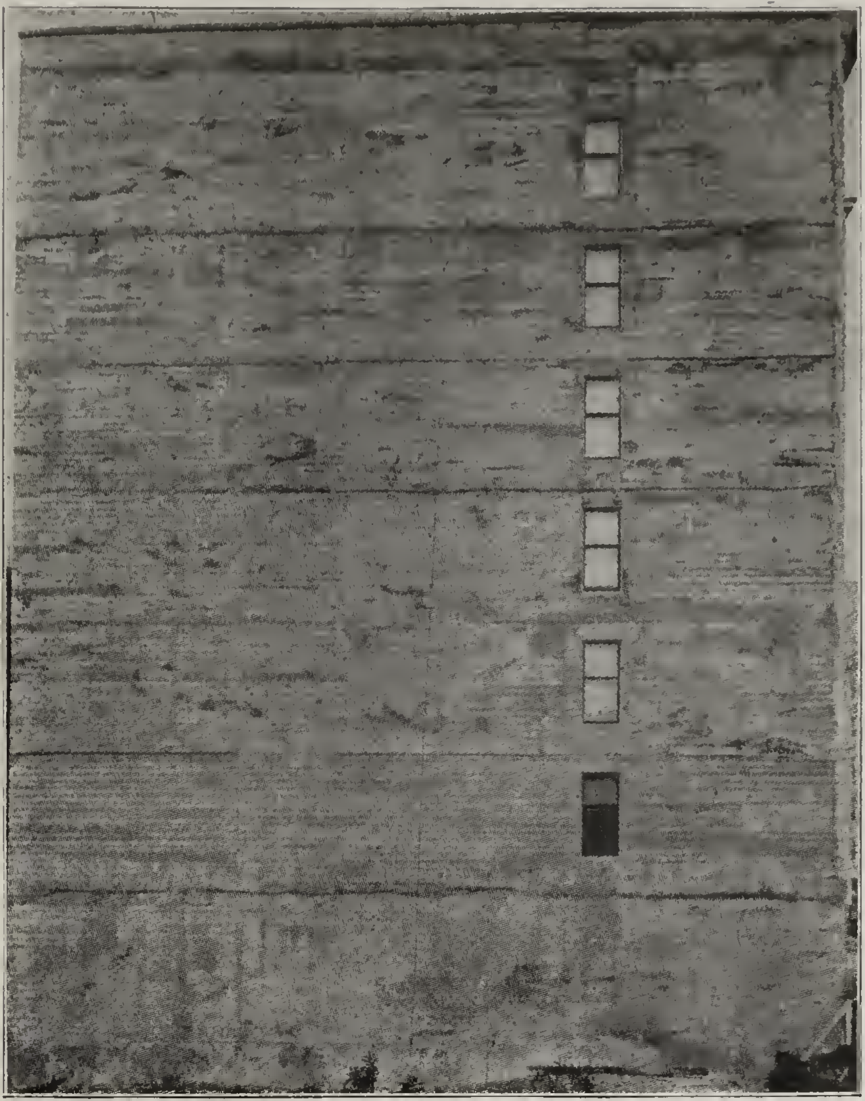
"The highest type of structure, that is, steel frame properly fireproofed, reinforced brick curtain walls with cement mortar, and partition walls of porous hollow tile will not cost any more than concrete properly handled and be superior as a building and fire resistant. It is far cheaper to build fireproof, but extremely difficult to show that a 10 to 25 per cent extra on first cost is a better investment than the original cheap plan. Look at the insurance rates, maintenance or upkeep, and the comparative shorter life of the structure. In the struggle to get a cheap construction we overlook much, and therefore et inferior work. Frequently it is amusing to note the cuts demanded in a plan by a client whose opinions are formed largely through vague notions, clever advertisements have brought to his attention."

Since San Francisco's visitation by earthquake, California architects have naturally turned their attention to producing forms of construction of sufficient strength to successfully withstand earthquake shocks. In order to bring permanent building methods more forcibly to the attention of those interested technically and otherwise, Mr. Ellery has issued an elaborately gotten up book or album, entitled "Permanency in Building Construction." In this book are illustrated various forms of brick and concrete construction, the illustrations showing plainly the dangers attendant on the use of concrete for permanent structures, pointing out the folly of erecting such structures under the impression that they are fireproof and lasting. In strong contrast to these faulty structures, substantial and elegant brick buildings are shown, bringing forcibly to public notice the vast difference in the two building materials.

San Francisco Building Largely with Brick.

Today, San Francisco is building many steel frame structures with curtain walls of reinforced brick eight inches in thickness, and wisely, too, for in good hard burned brick we have the best fireproof material extant, a material that goes through fire and comes out unharmed in strength. The curtain wall of this material is better able to resist external fire. Should the heat be sufficient to destroy the mortar between brick, the area affected is but the width of the joint by about one-half inch of its depth. This can be raked out and pointed at a minimum cost. A curtain wall of concrete subject to the same heat would dehydrate about one and one-half inches in depth, then how shall we replace the deadened material?

Exposed Reinforcing Metal in Concrete Construction. No Protection Against Inevitable Rust and Disintegration of Essential Reinforcement.

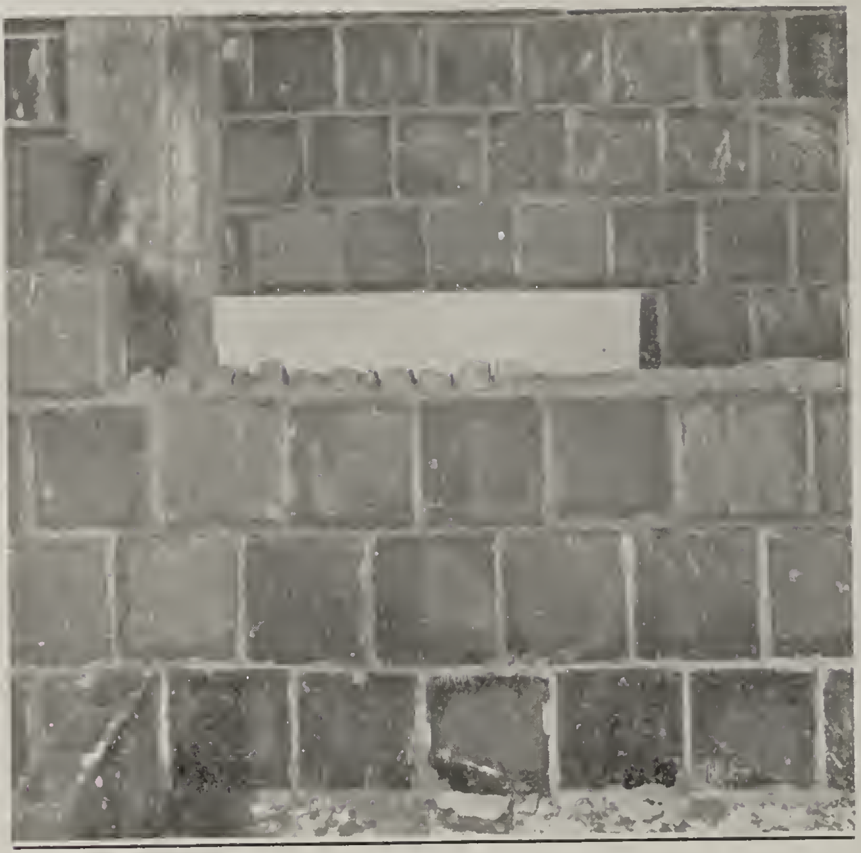


Reinforced Concrete Wall of a Building in San Francisco. Note the Lines Where the Pour of the Concrete Stopped and Resumed. Every One of These Lines Are Danger Spots.

Quoting from Mr. Ellery:

"This ever present question of making two pours of concrete adhere, is one of the stumbling blocks to the monolithic idea. We must take this as it is. Perhaps at some later day we may perfect concrete deposition so that we may avoid such annoyances. Right here let me give you a lesson on these two walls. While the forms for the concrete walls are erected to the roof line in one case, the reinforced brick wall is completed to that line in the other case. With the high priced skilled labor and the brick wall as against the cheaper labor on the concrete wall, there can be effected a saving of from 10 to 15 per cent in cost on the reinforced brick construction over the other wall. Are not these features worthy of consideration when a better fireproof wall is given in reinforced brick and cement mortar and its rigidity as tied to the steel frame will resist lateral action equal to any construction known?

"In this connection it may be explained that the reinforcement of brick curtain walls on steel frame consists of vertical rods not less than one-half inch diameter spaced twenty-four inches on centers. They penetrate the center of the eight inch brick wall and are fastened to the frame properly, either turning over the rod ends or placing nuts on them where they pass through the madeup section of steel. Erect a steel frame building, make the walls of reinforced brick, fire proof the structural parts, make your floors of slab construction and the work need not delay to wait for the material to cure. Concrete floor beams are treacherous during the first three or four weeks after they are cast. They are new and weak and certain tensile stresses are developed. From observation it seems



Tile Partition Reinforced with Wire Mesh. Cloth Stretched on Back Wall to Show Mortar Projections, Tile Removed to Show Keying.

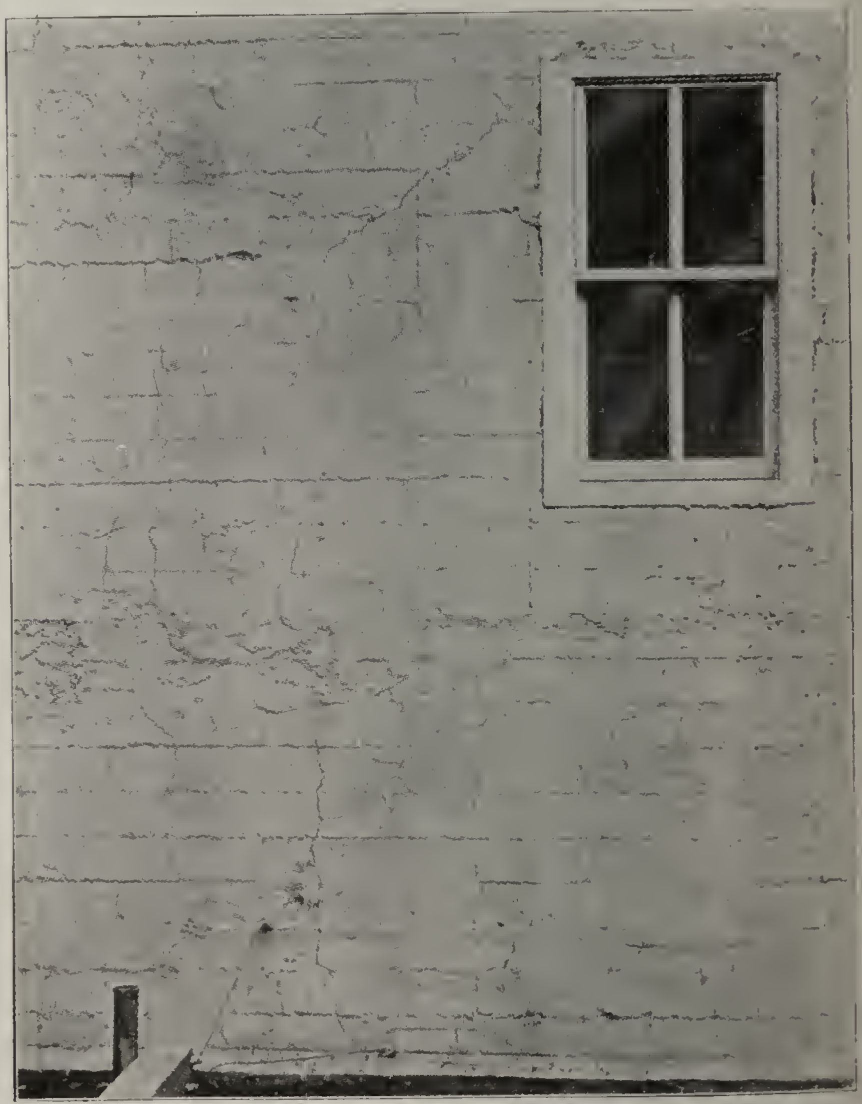
that the tensile stresses reach a maximum in about three months although the concrete gains strength long after this period. The volume changes have also reached their limit in about the same period. Just when to remove the forms is a question depending upon the rapidity of curing the mass. However, several weeks should elapse before their removal as local conditions may effect the time necessary for self-support of the work and prevent partial unseen and indeterminate rupture. Many times have I seen forms removed from beams, then after a few days, vertical cracks occur penetrating the beam to its neutral axis. Remember these forms were left on four weeks before removal. Structural steel does not require any such care. It goes into the work ready to assume stress immediately—no wait for curing—no fear of removal of forms prematurely. In fact it is made off the job, delivered, simply riveted into place ready to do its work. Again note the inspection—steel making and rolling is watched by experts while reinforced concrete receives no such close scrutiny during formation.

"The brick man knows well that his product used in walls adjusts through the joints, temperature, etc., and only unequal settlement of foundation or excessive exterior forces will cause rupture cracks. No doubt where sidewalk lights are required for our city buildings brick arches will give tighter and more stable work than concrete. You see the close attention given these lights in order to make them watertight and then regard the far lesser movement of the brick arch work and its superiority for this point becomes immediately apparent.

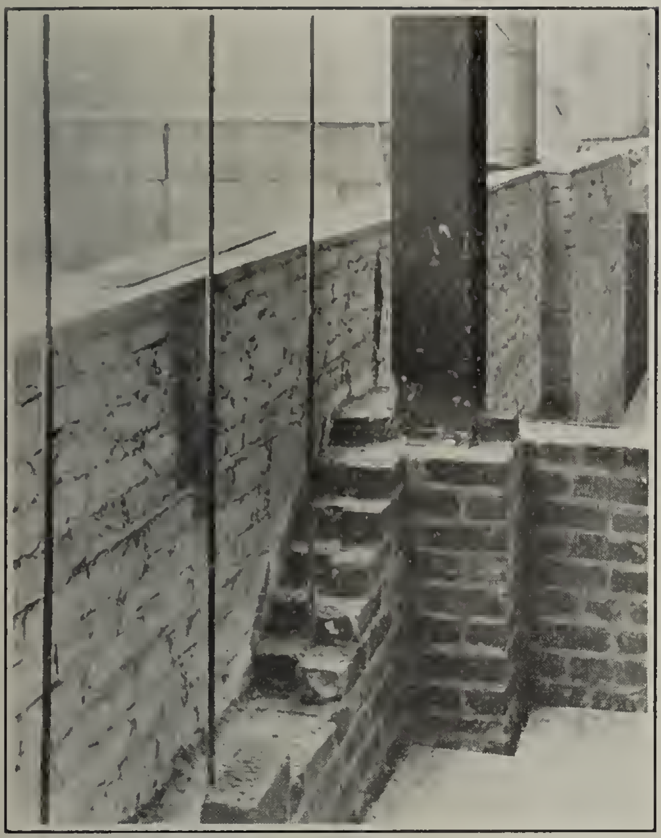
Importance of Fireproof Partition Walls.

"Another important item that goes to make for good work is the class of partition walls. Porous hollow tile is the best wall material in use today. Brick is excellent but heavy and concrete has not only the same objection of being heavy but additionally is solid and therefore more resounding than hollow tile. Plaster on metal laths or wire mesh is much used but is a very poor fire retardant. Hollow tile should not be hard burned. In the building of a partition of tile on each course there should be spread a layer of galvanized wire mesh as wide as the thickness of the whole tile so that the mortar will key itself into the hollow openings of the tile and thereby strengthen

Concrete Failure at Aetna, Pa. The Demolition Was Complete.



Reinforced Concrete Outer Wall, Painted But Not Plastered. The Owner is Puzzled to Know How the Shrinkage Crack Can be Remedied.



Reinforced Brick Wall on Steel Frame Building.

the wall and give it much rigidity. The old plan allowed the mortar only on the thin shell and webs which structurally was of little value. The scheme quoted above, however, does away with clips and gives excellent and practical results. All tile partition work should be constructed with the strips of mesh. The hollow tile when of proper dimensions, not hard burned, and set up with a good bond is the best fireproof and practical partition wall we can construct. Improper tile, set snug against a beam without allowance for an expansion for great heat may buckle and cast off allowing of no protection. The fireproofing of columns and beams with wire lath and plaster has but little value, concrete is good but tile will give best results. In case some of the tiles spall they may be taken out and be readily replaced with a minimum of expense. In concrete fire proofing, should it dehydrate the whole protection must be replaced."

ANNOUNCES LINCOLN HIGHWAY ROUTE.

Association Formed to Promote Trans-Continental Road Publishes Plans Proposed.

Thirteen states will be traversed by the Lincoln Highway, the route of which is definitely announced in a proclamation issued from the national offices of the Lincoln Highway Association at Detroit, Mich. The states which will be honored by this memorial to Abraham Lincoln are New York, New Jersey, Pennsylvania, Ohio, Indiana, Illinois, Iowa, Nebraska, Wyoming, Colorado, Utah, Nevada and California.

Starting in New York City the Highway passes through Jersey City, Newark and Trenton to Philadelphia, then west to Pittsburgh through the north central section of Ohio, over to Fort Wayne and South Bend, skirts Chicago, enters Joliet, Rochelle, Sterling and other Illinois cities, reaches Iowa at Clinton and leaves at Council Bluffs, passes through Omaha, goes to Denver and north to Cheyenne, west through Green River and Evanston to Salt Lake City, finds its way into Nevada by way of Tippet's ranch and after reaching Reno, goes to Lake Tahoe, California, finally ending on the Pacific seaboard at Oakland and San Francisco.

The directors of the Lincoln Highway Association have endeavored to select a route of easy grades yet combining the scenic splendors of the country. Some of the points either on, adjacent to or to be connected by branch highways are Gettysburg, Washington, Canton, the resting place of McKinley, the Mammoth Cave of Kentucky, the home of Lincoln in Springfield, Ill., Lincoln's birthplace in Kentucky, the scenic splendors of Colorado, the Grand Canyon of the Colorado, and the many and varied wonders of Utah, Nevada and California.

NEW TARIFF SCHEDULE SOON SETTLED.

Senate and House of Representatives Hope to Complete Revision and Pass Bill Before October 1st.

From present indications, the new tariff bill will be passed by both houses of Congress before the end of the present month and go to the President for his signature before the next issue of "Brick and Clay Record" is off the presses. It looks as though at least one part of the pottery schedule was definitely settled, as the Senate has practically met the figures that were a part of the Underwood bill, as passed by the House of Representatives. These refer to earthenware, crockeryware and stoneware, which, when not painted, gilded or decorated, will carry 35 per cent, with an additional five per cent if decorated. Bauxite is on the free list, as is also manganese, a mineral largely used in the clayworking industries.

Items of Interest

Charles Rothman, formerly with the Metropolitan Paving Brick Company, of Canton, Ohio, has been engaged as superintendent by the Indiana Paving Brick Company, of Brazil, Ind.

C. W. Anness, Jr., formerly with the Mexican Sewer Pipe Company, of Mexico City, Mex., and recently with the M. D. Valentine & Brother Company, of Woodbridge, N. J., has accepted the position of superintendent at the plant of the Raritan River Clay Company, at Keasby, N. J. Mr. Anness is a thoroughly experienced clayworker, having had more than twenty years' practical experience in various lines of clay manufacture.

The Northwestern Clay Manufacturing Company, which operates the large sewer-pipe plant at Griffin, Ill., is enlarging its plant by the erection of a four-story addition, 50 by 130 ft., to its main building. Five new kilns, each with a diameter of 33 ft. are being added, making seventeen kilns in all. Two new dry-pans and a new press are being installed. The company has a weekly payroll of more than $1,000 and is building twelve houses for the use of some of the new men who will be employed when the improvements are completed.

"Traffic & Transportation" prints an idea which it says might be adopted to advantage by managers of some big warehouses where employes have to take many steps empty-handed, or carrying only light packages, and which is used by the New Bedford Electric Railway. The storeroom in the New Bedford car house is 170 ft. long by 80 ft. in width. It is equipped with 3,241 adjustable steel bins; each row of the bins is 126 ft. long, 9 ft. 6 in. high and contains 995 compartments. The storeroom attendants wear roller-skates, and by this novel introduction, much time has been saved on their trips around the premises.

Paving Brick Convention Draws Large Throngs to Cleveland

It is fortunate that Cleveland, Ohio, has been adding to its excellent hotel facilities during the past two years, for the publicity given the plans of the National Paving Brick Manufacturers' Association has reaped a full harvest. The question no longer is "Are you going to the convention?" but "Have you reserved your rooms?"

Secretary Blair is deluged with acceptances, not only from engineers and road experts, but has heard from a host of manufacturers and road contractors, and he has the satisfaction of knowing that this convention will eclipse, in point of attendance, any previous gathering of paving brick men.

Manufacturers who have already signified their intention of putting their cars at the disposal of the committee have been asked to enlist the good offices of friends and neighbors and to bring the cars in fleets, rather than singly. It has been pointed out that even though the owners may not be directly interested in the manufacture of paving brick, or in the building of streets and roads, as a business enterprise, that the boom that will be given the good roads movement by this convention will bring rich rewards to the owners of motor cars, in the way of better roads and consequent lower costs of upkeep on the machines.

The committee on entertainment has been working on a well planned program that will engross the visitors in the odd moments that will be spent between the sessions of the convention and the trips that will be a part of the special demonstration mapped out for the benefit of men who will control the choice of road building material in a dozen states. The pride of the "Sixth City" in its well advertised hospitality will be shown by the "committee of the glad hand" that will do its part to make the convention a big success in a social way, to round out the strongly practical, profitable and progressive movements that are the real business of this convention.

Delegates, guests and visitors who have not been in Cleveland for a year or more will be surprised at the magnificence of the new Hotel Statler, the last word in hostelries. Built, seemingly, with a view to the proper handling of big meetings, it has ample provision for conferences, large and small. Ante-rooms and corridors are arranged to be a part of and yet apart from the main assembly rooms. Comfortable settees are at convenient points for groups of two or three to get together and discuss momemtous questions, without seeking other floors and going long distances to obtain quasi-privacy.

While modern in every particular, and with conveniences in the various rooms that are surprisingly complete, the Hotel Statler is, in a way, more of a man's hotel than the average large caravansary. One never feels the need of a dress coat or a dinner jacket, unless he insists upon going to the main dining room. Grills and other inviting, den-like rooms, masculine in decoration and atmosphere, make informal parties, at which a bite and a sup, with, perhaps, a little business talk on the side, can be secured quickly and in an environment that is not as distracting as that found in hotels in other cities. One does not have to leave the Statler to find "a quiet place to get something to eat."

GOVERNORS IN GOOD ROADS MOVEMENT.

State Officials Promise Attendance at Congress Held in Detroit, Sept. 29-Oct. 4.

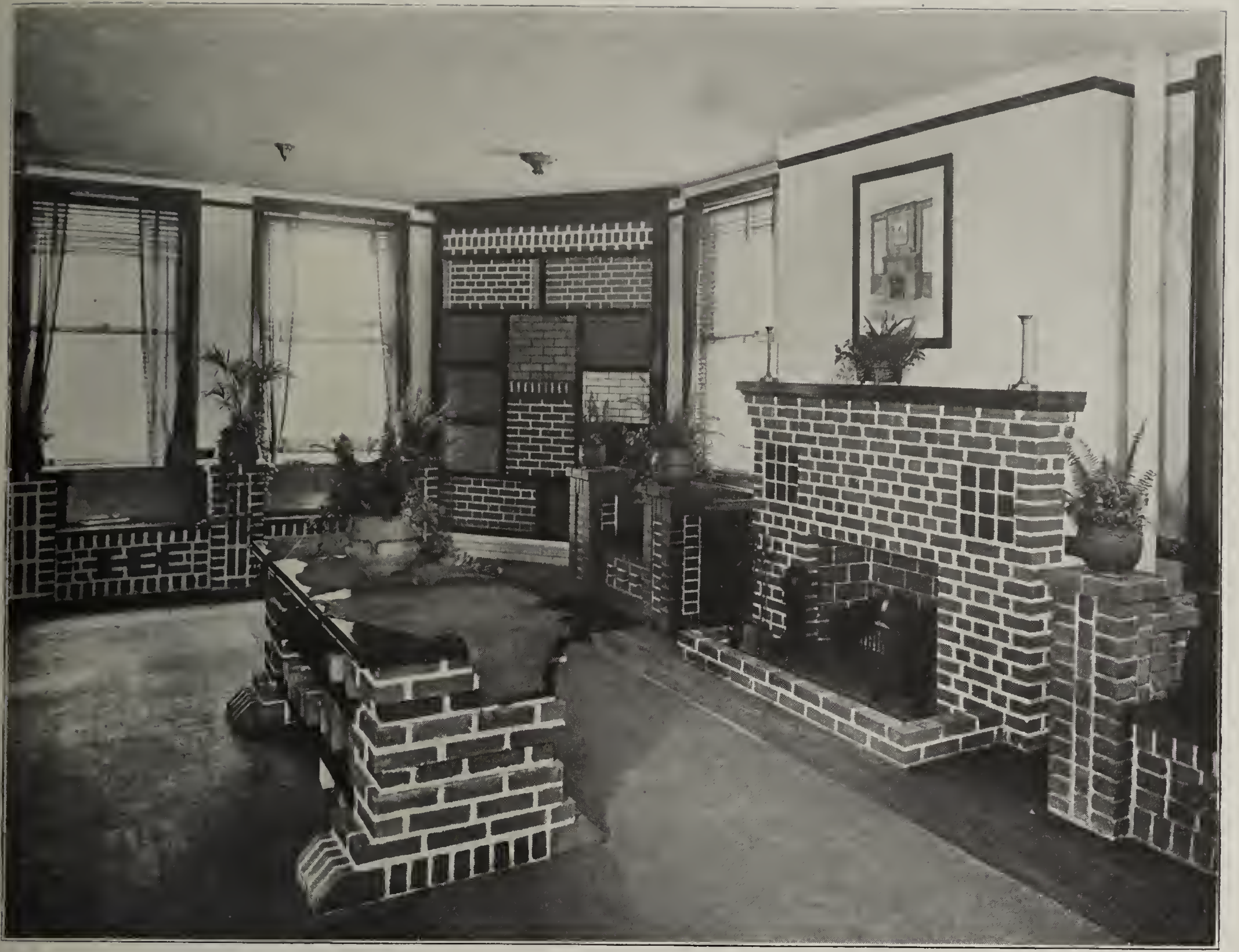
Long before the enthusiasm of the Cleveland paving brick convention subsides, another meeting, fraught with splendid plans for the betterment of road conditions, will be in session in Detroit, Mich. Here, on September 29th, and holding until October 4th, will be the Third American Road Congress, in which the American Highway Association, the American Automobile Association and the Michigan State Good Roads Association are prime factors. This congress has received recognition by men high in the country's counsels, as well as officials from over the Canadian borderline. Prominent men, whose names are household words wherever road improvement is talked, will be present, and the papers that will be read will interest, instruct and, it is hoped, bear fruit in the shape of better roads in every state in the Union.

Governor Ferris, of Michigan, is personally urging the governors of each state to name delegates to the Third American Road Congress. Thirty governors have already named their delegates.

Important progress is exected to be made in three great questions affecting the road movement. The Congress will endeavor to agree upon a policy of national aid which, with the united support of the good roads workers throughout the country, will be submitted to the Congress of the United States. Steps will be taken at the session on State Road Legislation, to be held under the auspices of the American Bar Association, to the formation, through official action by the several states, of an inter-state commission to codify and simplify existing state road laws. At present, most of the states are laboring under a weight of antiquated and contradictory road laws, and it is plain that the commission will recommend simple, clearcut, and uniform road laws as a substitute for the mass of useless existing road legislation. Maintenance of roads will be discussed from every standpoint during the sessions held by the American Highway Association, the parent organization in the Congress, and the engineers will endeavor to determine among themselves upon the steps which should be taken in the several states to insure adequate maintenance.

John Miller, of the firm of William Miller & Sons, No. 530 Fernando street, Pittsburgh, Pa., is said to be interested in the formation of a new company, the object of which is to manufacture paving brick. It is also said that the interested parties have planned to build their new plant in the vicinity of Industry, Beaver County, Pa., overlooking the Ohio river, and having Pennsylvania railroad sidings.

Shortage of water is causing serious loss to Kansas brickmakers. At Coffeyville it has been found necessary to work the machine room on night shift instead of days, since the pressure is sufficiently great only after other industries close, to take care of the brickmakers' requirements. The change from day to night work is upsetting the wage scale, and it is thought that many of the plants will resort to digging artesian wells, in order to prevent trouble of this nature in the future.



General View of the Omaha Sales Room of the Hydraulic-Press Brick Company.

Artistic Show Room for Brick

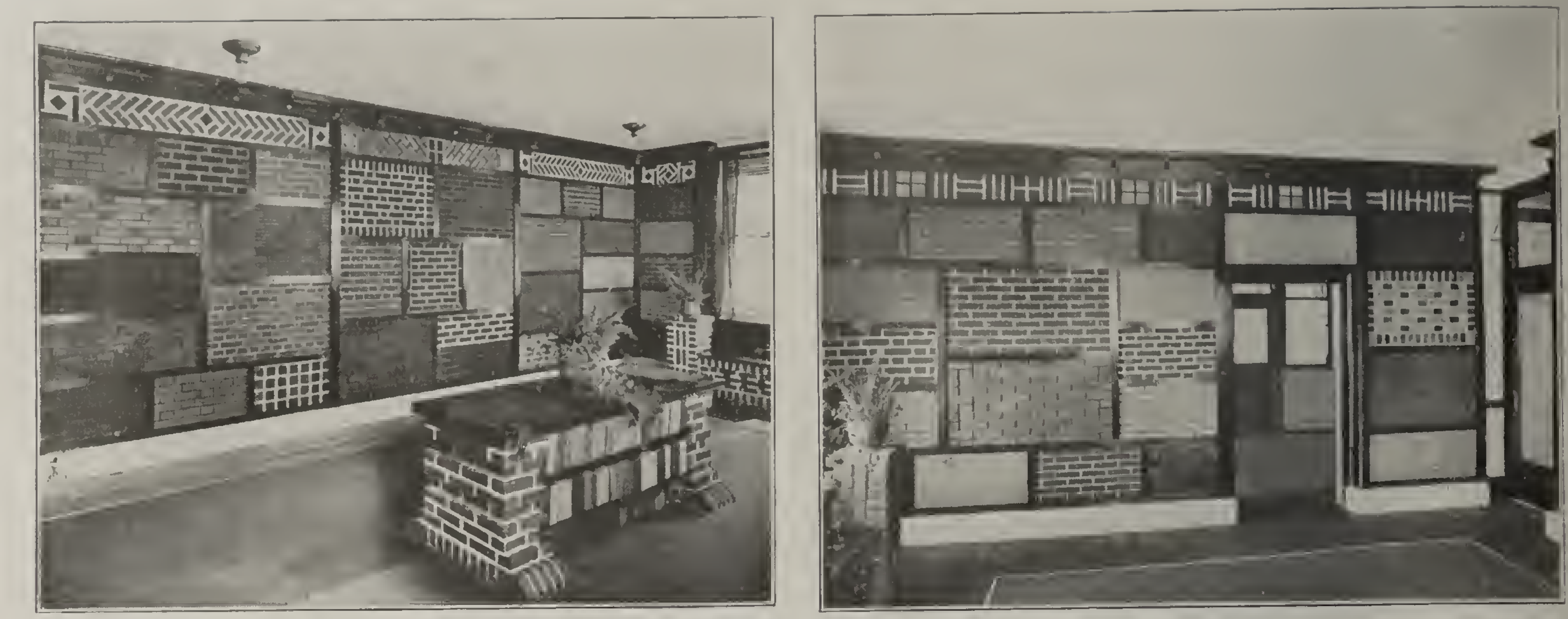
OMAHA PLANT DISPLAYS WARES WITH A CHARM THAT CANNOT HELP PROVING A LURE FOR THE LOVER OF THE BEAUTIFUL

ONE of the handsomest brick salesrooms in the Middle West and Western country is that of the Hydraulic-Press Brick Company, in the Woodmen of the World building, at Omaha, Neb. In it, the keynote, to which all other details are brought in harmony, is the frankly expressed mortar joint, sign and symbol of the higher thought in brickwork.

The artistic sense of the designer shows itself in the varying size of the panels—no section of the walls' space being monotonous. Composition is given by a series of dadoes that bind each group of panels together, and in these, a series of designs is worked that offer, in themselves, clever suggestions to the intelligent user of face-brick, as with them he can ornament his brick front without using the fast-becoming-obsolete moulded brick. These dadoes are shown in the two small illustrations that accompany this story, and are worth studying. The one on the right is particularly clever, being a combination of three brick laid on the bed, then three as a "soldier course" then four half brick, laid bed out, followed by the three "soldiers" and the three brick laid on the bed. The other design, shown in the dado of the illustration on the left, being herring-bone, means a greater expense in laying—althogether the simpler design on the right comments a greater need of praise.

The base of the display racks is white enamel brick, laid in white mortar, and the woodwork is in Circassian walnut finish, which conforms to the woodwork in the office—that is, the door casings, window frames, etc. The table is built of brick, with the exception of the shelves, which are of the same finish wood as the other woodwork in the salesroom. The window seats are erected to show garden wall effects and at the same time cover up the unsightly radiators that are so much of a problem to everyone who wants to make an artistic interior.

R. W. Besley, manager of the Omaha branch of the Hydraulic-Press Brick Company, writing to "Brick & Clay Record," says, "While we have shown every bond common to modern brick work, we have not indulged in anything that

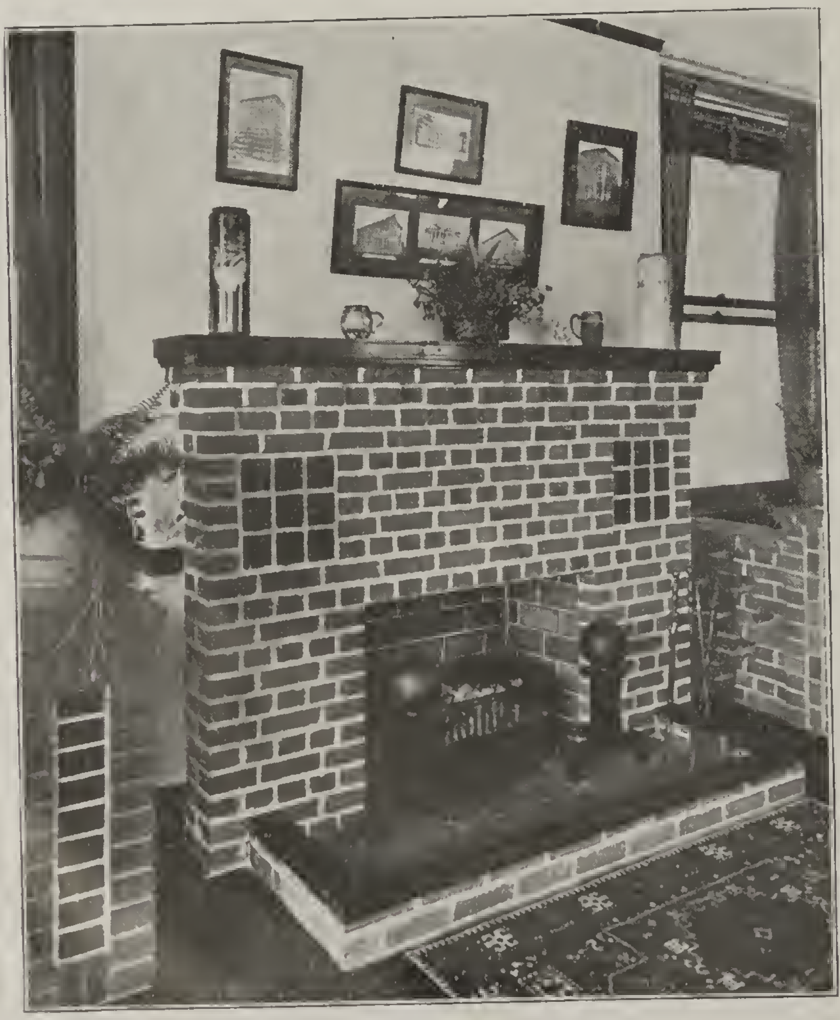


Showing Treatment of Dadoes in Hydraulic-Press Brick Company's Omaha Show Room.

cannot be reproduced by the average brick mason." Looking over the pictures of his office, it would seem that the "average" for Omaha is rather high.

The fireplace is built of what Mr. Besley calls the "two-tone matte," a brick that is manufactured by the Hydraulic-Press Brick Company at Kansas City. It is laid in white mortar, with a rough-cut flush joint. The panels are the red matte brick, cut in half and laid as bats, beds out, as in the dadoes.

Mr. Besley seems to have done wonders with the space he had to work in; few face brick dealers (and this is a typical dealer's office, although bearing the name of a manufacturer) can afford to take entire floors ,or have buildings altered for them. The space in which their brick display is made—or "salesroom" located—is built and finished before they see it, and is as well adapted for a millinery shop or a vacuum cleaner office, as for a brick dealer's exhibit. As a rule, everything is wrong—the direction of the light, the lines of the room and the position of the openings. Evidently Mr. Besley had these difficulties to contend with, and the time and thought he must have given to the planning is and only can be understood by those who have solved the same puzzles and achieved the same, or similar results.



A Fireplace That Suggests Something.

WHY BRICK HOUSES ARE CHEAPER.

Indianapolis Architect Points to Relatively High Labor Cost on Small Frame Houses.

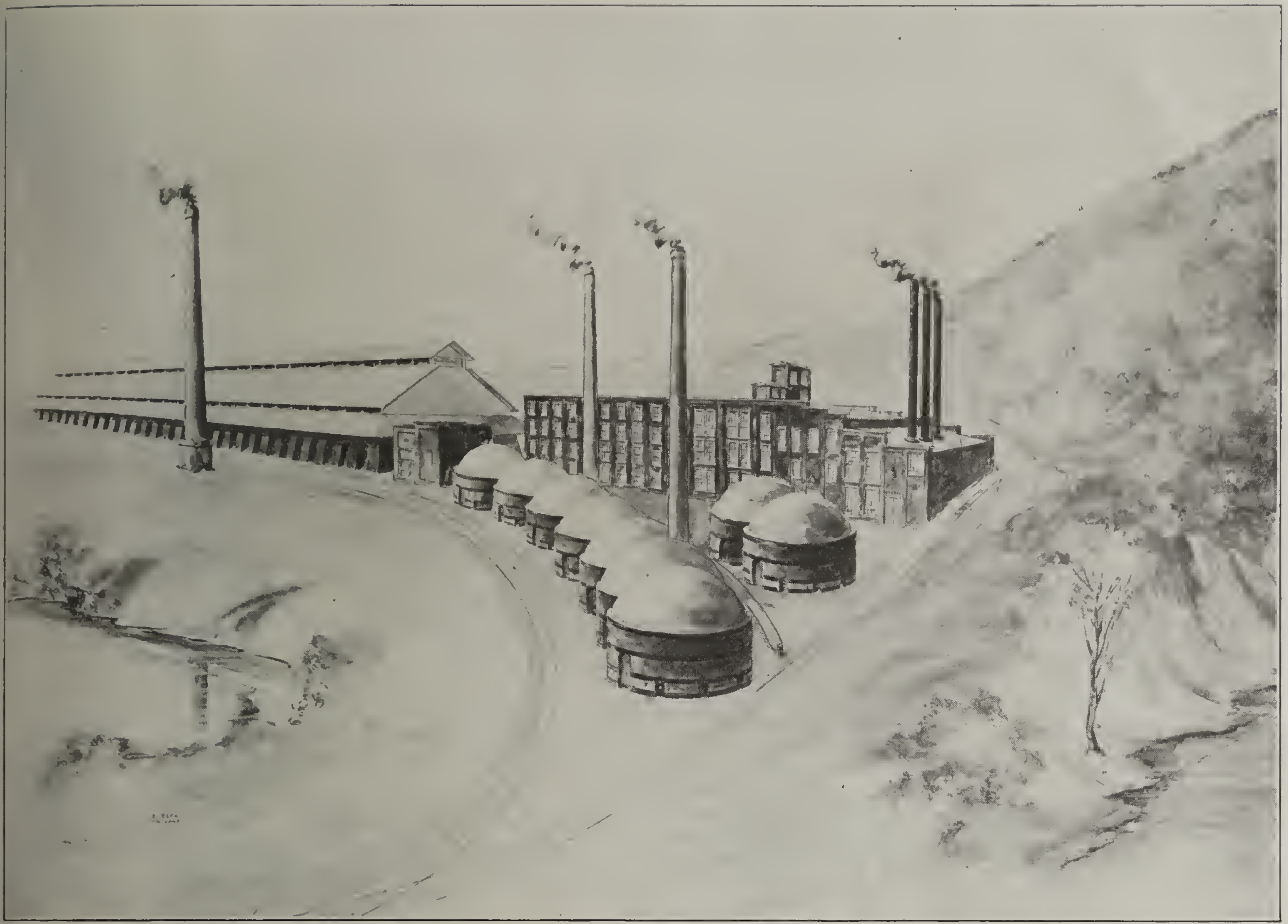
An Indianapolis, Ind., architect, who was recently asked by a prospective home builder why so large a number of small houses were being constructed with brick exteriors, instead of frame, as in the past, and questioning the economy of brick construction, made the following statement:

"There is a belief in the minds of a great many people that brick construction costs from 40 to 50 per cent more than frame construction. Experience and investigation, however, have shown this belief to be a fallacy. The large number of brick residences that have been built during the last year have done much to establish the fact that brick is really the best material for the economical builder to use.

"An investigation of the costs of building materials with the aid of an architect will prove both interesting and instructive, especially when the brick construction is compared to the cost of frame construction. In frame construction, labor is employed in seven different instances, namely: (1) The studding, which forms the frame of the building; (2) the sheathing, (3) the building paper, (4) the weather boarding, (5) the lathing, (6) the plastering, and (7) the painting, which requires three coats to get good results. In brick construction, but two processes are necessary, (1) the brick work and (2) the plastering.

"Carefully compiled statistics show that the actual cost of brick walls over frame varies from 15 to 40 per cent, depending largely on the price of the face brick selected. As the walls of any building cost only about 10 per cent of the total, brick construction would add only from 2 to 4 per cent to the total first cost of the building. As it is necessary to repaint a frame dwelling every few years, it will readily be seen that brick construction, besides being the best, is the cheapest. A building constructed of brick is much easier heated than a frame one, and the saving in fuel is an item to be considered. Also, it must not be forgotten that with the faces and shades of brick now being manufactured it is possible to build a handsomer building of brick than from any other material."

The day is fast waning when architects will tell clients that it is impossible to build in brick unless an expenditure of a large amount is contemplated; experience has proven a costly teacher, but the lesson is well taught and the knowledge widely spread.



Designs a Clay Plant on New Lines

ENGINEER REMODELS MISSOURI YARD, KEEPING EFFICIENCY AND ECONOMY TO THE FRONT AND SECURES UNUSUAL RESULTS

IT has been the custom to so follow certain set lines in clay plant construction that "clay plants look like clay plants" the world over and the passing tourist never is in doubt as to their identity.

The tendency of the times, however, is to greater efficiency and greater economy and the clay worker gradually is drawing away from long established precedent and many of the more recent constructions show such marked changes, soon it will be difficult to tell a clay plant from an automobile factory, so far as exterior appearances are concerned.

The remodeled plant described in this article is the work of W. C. Kirkpatrick, a Chicago engineer, and illustrates the point in mind.

THE plant as redesigned for the Meek Brick & Tile Co., of Chillicothe, Mo., contemplates the rebuilding of the plant along simple lines that are productive of great economy due to the routing of the raw material direct from the shale hill through the plant into shipment with a minimum labor cost.

Clay products are heavy and the moving of every ounce means the use of energy which costs money and must be charged up to the cost of production and eventually paid by the consumer.

The elimination of turn tables, using instead transfer cars electric driven which will run on curved tracks, the shipping track located immediately at the side of the kilns so that all product can be shipped direct for the kiln, or direct from storage without long hauls, eliminates to a considerable degree the high cost of production.

The adoption of a tunnel system built up from timbers erected in front of the face of the shale hill which is near 200 feet in height, with tracks running from the crushers into every tunnel, with hoppers located in the housing overhead on 10-foot centers, permits the shooting down of hundreds of tons of shale upon the top of the tunnels so that one man can load cars sufficient for any capacity desired, eliminates the expense of steam shovel and permits the working of a 200-foot face without danger to life or property in a most economical and efficient manner.

The raw material will be dumped by gravity into jaw crushers, delivering on belt conveyors equipped with an automatic tripper distributing the crushed material into the clay storage for weathering. This storage is equipped with wing roofs and sides so that the sun and wind can be used in nature's own way in disintegrating the shale. The weathered clay will be conveyed from the storage on belt conveyors located in tunnels beneath and delivered direct to the dry pans or by car direct from the tunnels if desired to eliminate the weathered product. Elevators deliver the clay to the screens which deliver into the hoppers over the pug mill by gravity.

All small tile, or brick will be loaded on standard dryer cars and passed through single track waste heat tunnel dryers, while all large tile and hollow ware will be placed on an elevator at the cutter and elevated to any one of the dry floors above which not only extends over a large portion of the machine room but also over the entire area of the tunnel dryer, using a platform elevator to deliver the loaded trucks from the dry floors to kiln level.

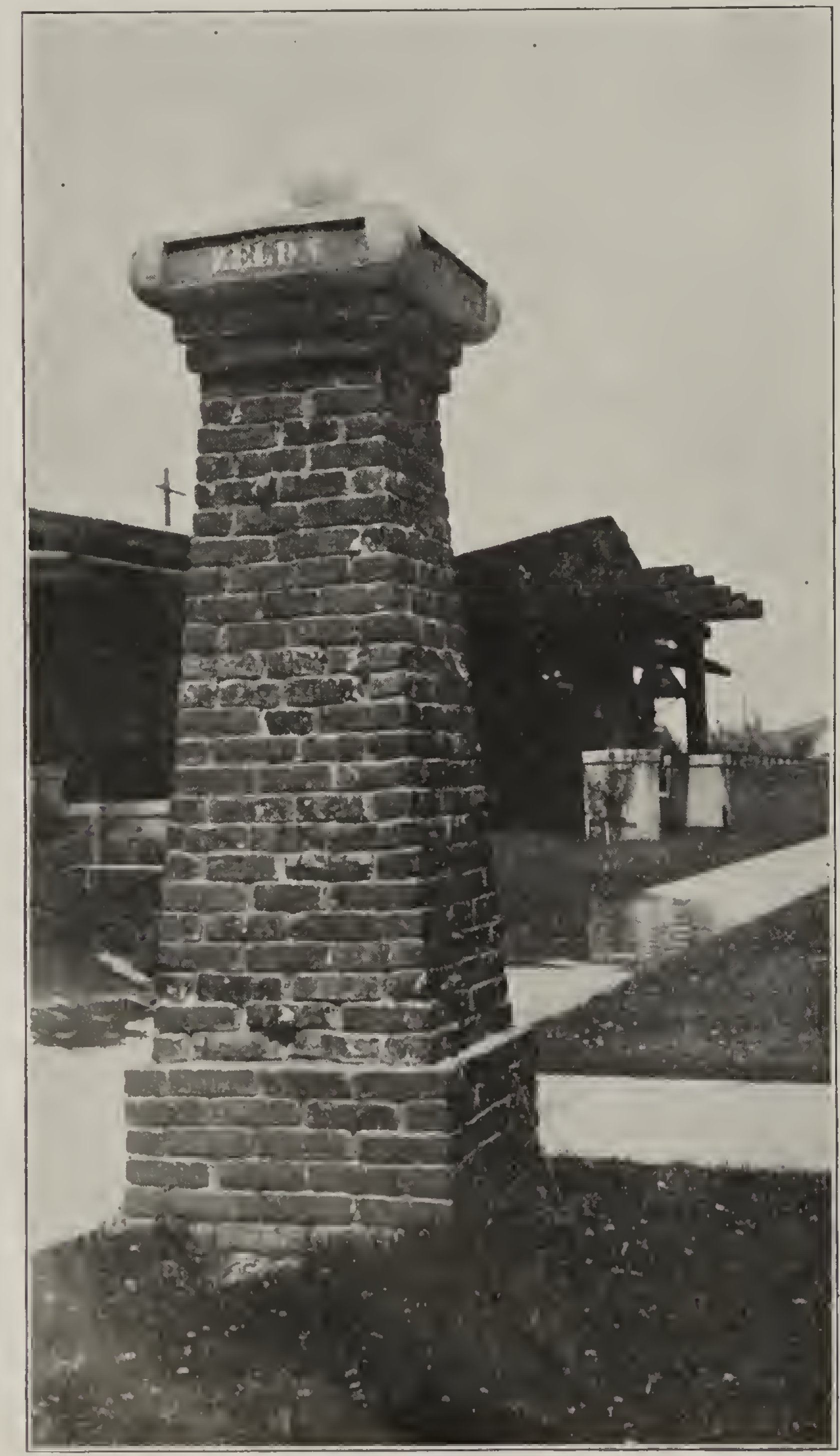
From the dryer the product will pass through the court of the continuous kiln which is supplied with shipping track immediately at the outer side of each section with the storage just across the track.

The down-down draft kilns have the transfer track between the line with shipping track immediately to the opposite side with the storage just across the track.

The firing will be continued with the direct coal fired system and the power supplied with steam, but will later be displaced with producer gas power equipment, also producer gas burning, in which the gas will be thoroughly washed, used under pressure and valve control just the same as natural gas together with air supplied under pressure and valve control.

The plant will have, when completed, two lines of machinery equipment each with a capacity of 100 to 120 tons of hollow ware per day, or from 50,000 to 60,000 brick per day, and while the engineer has prepared for the manufacture of brick, yet the plant is especially designed for hollow ware, and as soon as the sales equal the first unit capacity the second will be installed, and when the sales equal the capacity of the complete plant capacity the erection of a separate plant for the manufacture of vitrified building and paving brick will be considered as provided for by the engineer.

The work of the engineer not only covers the designing and erection of the plant but includes a complete plan of operation, sales and distribution, advertising the product and educating the general public to its uses and the benefits derived therefrom, as well as assist the farmers in the proper method of laying out their tile ditches.



Use Brick for Street Markers in Los Angeles

A new form of street indicator has been installed in one of the newly-subdivided tracts of land lying just north of the city of Los Angeles, Cal. The electric portion of this marker has never before been incorporated in any street marker thus far erected in California, which probably means the entire country, for Southern California is where the "tract marker" idea was originated not a great while ago.

This street sign works twenty-four hours in the day. During the daylight hours the street names are plainly visible, while at night the light from the incandescent lamp that is located inside the cap of the marker shines brightly through the transparent glass of which the letters forming the street names are made. In addition to being a street marker the standard is a street light, illuminating the surrounding territory. For this purpose an eight-inch opaque glass globe has been set on top of the cap.

This street "marker" fad was started in Southern California something over two years ago. Since that time there has been hardly a tract subdivided and placed on the market that was not first beautified with some sort of a street post. Some of these are made of cement, some of cobblestone, others of brick, while still others are composed of heavy timbers.

The marker here described is made principally of red brick, with a clinker brick scattered here and there throughout its construction. The base of this brickwork measures two and a half feet across, while the top is a foot and a half in diameter. Upon this section of the pier rests a hollow cement cap, this being eight inches thick and two feet wide. In this cap is placed the electric lamp and upon it rests the opaque globe. The entire marker is about eleven and a half feet in height. Although not expensive, this marker is indeed a beautifier. Its architecture leans a little toward the Spanish type, which style is used to a great extent in the southern section of the Golden State.

Power Consumption

STIFF MUD PLANTS FACE PROBLEM WHICH MACHINERY CATALOGUES FAIL TO SOLVE

By Richard R. Hice

Few manufacturers—except in the case of the large corporations where efficiency experts are employed, go into the matter of power economy with any degree of thoroughness, yet many dollars go to waste annually because of inattention to this important item. Mr. Hice read a very interesting paper on this subject before the last meeting of the American Ceramic Society and it is worth giving deep consideration.

ONE of the problems in connection with the equipment of any clay-working establishment is that of power, and this is perhaps more important in stiff-mud brick plants than in other branches of the clay industry. When we examine the catalogues and literature issued by the various manufacturers of brick-making machinery, nothing is more marked than the absence of any information, at least of a reliable character, concerning the power needed. The fact that there is a wide difference in the ideas of different machine people as to the power required by machines, of supposedly the same capacity, is shown by the difference in the diameter, width of face and speed of the pulleys ordinarily used. It must be admitted that machines of practically the same capacity, differently proportioned, will require in some cases somewhat different power equipment. This, however, is by no means so true of some classes of machinery as of others.

In the case of dry pans we should not expect much difference in the power consumption in grinding, say, the material for twenty-five hundred bricks per hour in pans of different makes, using the same clay. It is to be granted that different clays may require different amounts of power, even when the capacity of the pan may be the same. One clay may be quite hard but drop readily through the screen plates, another may be quite easily crushed, but, owing to physical conditions, arches over the slots in the screen plate and does not so readily pass out of the pan. In such cases there may be quite a difference in the power consumption. On the other hand where the same clay is used in pans of different makes and different proportions of weight of mullers, width of face, and arrangement of slots in the screen plates, there may be considerable difference in the power consumption, but if the arrangement of the screen plates is such as to allow the material to pass through readily there should be but little difference in the power consumption of different makes of pans.

In the matter of pug mills there is a marked difference in the power consumption, due to the amount of pugging given the clay and not to the difference in shape and "set" of the knives, as generally assumed.

Sees Little Difference in Auger Machines.

In auger brick machines (turning out the same number of bricks per hour, of the same clay, screened to the same fineness and pugged the same) there is certainly but little difference in the power consumed where the bricks are the same density. There is in practice a very marked difference in the density of brick made on different machines, the shape and proportion of the barrels, size and character of the auger and die, being designed to produce brick with perfect corners and reasonably free of laminations, and not of any fixed density. This difference in the column is shown in the difference in shrinkage of bricks made of the same clay, ground and pugged the same, when made in different machines. The density of the burned brick may be practically the same, notwithstanding the difference in the column as it comes from the die.

In all the foregoing generalizations, no consideration is of course, given to the matter of internal friction of the machine itself, or to the fact of more friction between the moving clay and the machine in one case than in another These are factors that are largely constant and which, if considered, mean a consideration of particular makes of machines. In the case of auger brick machines, it can be stated as a general rule that the denser the column the more friction between the clay and the machine to be expected, and this is true regardless of the proportion of the machine barrel, or the shape of the knives and dies.

It is the object of this paper, not so much to point out how much power is required for any particular machine, but rather to show the relative amounts of power required by a particular plant operated by a fairly good steam installation, and by the same plant when re-built after a fire and operated by electricity. It is recognized, of course, as suggested in the foregoing statements, that these figures should not be used quantitatively with some other material; but it is believed the results will hold relatively good in all cases.

Engine Carries Frequent Overloads.

This plant, as ordinarily designed, was equipped with an 18 by 42 Corliss engine developing 175 h. p. The material used was a low grade of fire clay from the lower Kittanning vein, relatively hard to grind and screened rather fine. The power was taken from the engine to a line shaft, from which the machinery was all driven. The dry pans, pug mills, and brick machine were driven by belts, and the elevators by rope drive. Owing to the occasional coincidence of the peak loads on the several machines, it was not an uncommon thing to have the engine overloaded several times a day; and to take care of these peaks it was necessary to maintain the full steam pressure constantly, whether any of the machines were temporarily out of use or not. A somewhat careful estimate of the power developed at the boilers for one thousand brick shows it would run from 75 to 82 h. p. hours.

In common with the usual experience for plants, this one went up in smoke; and in rebuilding it was decided to abandon the steam plant, equip with motors and purchase the current. With the actual cost this paper has nothing to do. In designing the equipment, we found that we had but little data on which to go, and it was determined finally to equip as follows:

Nine foot dry pans are driven by belt from 35 h. p., 60 cycle, 2 phase, 220 v., squirrel cage type motors, running 560 r. p. m. The shaft of the motors used was very heavy, and they were equipped, therefore, with an overhanging pulley, no outboard being needed. These have now been in use for six months and are entirely satisfactory.

The elevators are driven by independent 7½ h. p., 60 cycle, 2 phase, 220 v., squirrel cage type motors. These motors are, of course, larger than the load seems to require; but they are belted directly to the elevator, no clutches being interposed, and, therefore, the starting torque is very heavy, having the dead elevator, which is about 50 feet in height, to start. There is an independent lead line for each dry pan and elevator motor.

The brick machine and pug mill are independent, but both are driven by the same motor. This is a 75 h. p., 60 cycle, 2 phase, 220 v., squirrel cage type motor, running 570 r. p. m. In this motor, the shaft is extended on each end and equipped with pulleys, one of which drives the brick machine and the other the pug mill. This has proven quite satisfactory as the pull on the bearings is largely balanced by this arrangement and there is no necessity for outboard bearings.

The clay from the screens is carried by a belt conveyor to the pug mill, which is driven by a 3 h. p. motor, using a belt drive. The pump for water supply is also driven by a 3 h. p. motor, and the D. C. generator, which develops the current for operating the drills in the clay mine, is driven by a 5 h. p. motor. A 3 h. p. motor is also used to drive the small machine shop in connection with the plant.

The switchboard is arranged in two circuits, one of which carries the dry pans and elevators, and thus the current consumed in the grinding and elevating is at all times measured by itself. A second circuit carries the brick machine and pug mill motors, also the dust conveyor, D. C. generator, and machine shop motors, so that the reading of the meter on this circuit is more than the brick machine and pug mill proper. The light circuits are entirely independent.

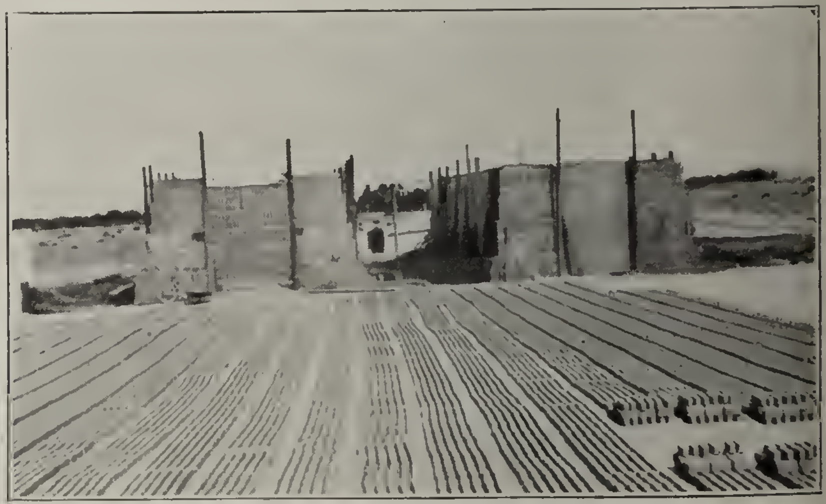
The brick machine and pug mill motors, and the dry pan motors are all equipped with overload and low voltage release, a feature which seems quite valuable when making installations of this character.

The average power consumption for the production of 1,620,700 brick was 30.4 k. w., or 40.75 h. p. hours, per M. brick. Something over one-half of this was consumed in grinding, the average power consumption per. M. brick of the dry pans and elevators being 16.8 k. w. (22.52 h. p. hours) while that of the brick machine, pug mill, conveyor, pump, D. C. generator, and machine shop was 13.6 k. w. (18.23 h. p. hours) per M. brick. These average figures of power consumption per M. brick compare very favorably with the power necessarily provided by the steam plant, being less than 60 per cent of what the steam plant provided. This is due to a considerable degree to the fact that during every small shut-down of a machine it is necessary that the steam be kept up in the boilers and that the rest of the plant, including all shafting, be kept in operation, and in cases where but a small portion of the plant is in operation the entire dead load of engine, shafting, etc., must be carried without any return. When using electricity, with independent motor drives, the power consumption is cut off with the machine. These savings are, of course, obvious to anyone.

In our own case, we buy the current, and hence there is no necessity of providing for the peak load as would be the case if we were using steam or if we were generating our own current in any manner. It is not intended to suggest that where one is using electricity and generating his current he could reduce the size of the power plant as indicated by the difference of power consumption shown by the foregoing figures.

Few of us probably realize the real cost of our steam power, and even where electricity can be bought at a reasonable rate, most are inclined to think it much more expensive than their old steam plant. There is necessarily a great variation in the cost of power at various plants, due to ever changing conditions; but it would seem safe to say that the power consumed in most stiff-mud brick plants really costs 75 cents to $1.00 or more per M brick. The cost of current where it is bought also varies greatly, and an average rate would probably be a mere guess.

Saves $510 in Fuel on 325,000 Brick



A saving of $510.00 in fuel, in burning 325,000 brick, is the record made by the Boss system of burning on the yard of William F. Sherwood, of Payette, Idaho. This is cutting the fuel cost with a vengeance, as it reduces the amount that goes up in smoke by 64 per cent. In a letter written Mr. Boss by Mr. Sherwood, the latter says:

"I have just finished burning a kiln of brick of 325,000 with the Boss system and must say I have the best burn I ever saw, even and nice settle all over the top and I did it for 90c per M., where with the old way of burning it would have cost me (to get anything like as good a burn) $2.50 per M., and I saved 50 per cent on the labor. I am pleased to recommend the system to any brickmaker and will gladly answer any letters that may be sent me about it. If any of my fellow clayworkers want to visit my yard I will show them what has been done, and I want to say that if I had time and space I could write all day of the advantages of the Boss system over the old way. My only regret is that I did not put the Boss system in years ago, and saved the money that I am only beginning to save now."

With fuel constantly increasing in cost, letters like the above offer some encouragement to the brickmaker.

Selling Brick

SALESMANSHIP AND ITS APPLICATION BY THE MANUFACTURER OF BURNED CLAY PRODUCTS

Reading Human Nature

Heart Talk No. 9

By Iverson C. Wells

ONE must know how to read human nature—how to understand men, if he hopes to become a real salesman. It is this ability to analyze—to size up men, that gives one the open road to success. No two persons are alike, so it has been said. Likewise no two customers can be approached in the same way. One man may be a grouch and must be handled accordingly. Another may be an angel in disposition. What would be considered tact in one case would be business suicide in another.

It is not necessary to become a hypnotist—yet a successful salesman unconsciously is, in a way. But it IS necessary to be able to ANTICIPATE the thoughts of your customer—to actually know what he would think under certain conditions and circumstances. It is necessary to know his dislikes and his likes—to understand his moods and mental temperature.

That sounds like mind-reading, does it not? It is, in a way, and the MORE of a mind-reader you are the better salesman you are.

I know a salesman who is rated as one of the most successful in the clay product field. A friend once said of him that he could size up a man at a glance and tell him what he was going to think about next week. It is doubtful if he could actually tell what one's thoughts were at anytime, but he understood men so well it gave you the creeps to see him gauge a customer.

This salesman is a "Good mixer." He can adapt himself to any crowd or class. He makes everyone he talks to "feel at home" the minute he starts a conversation. He seems to be able to understand a stranger the same as you and I understand a life-long friend. He is never out of kilter with anyone. There is no repelling influence from him. He fits in wherever he goes, with whomsoever he meets.

And, yet, this same salesman once was a misfit, according to his own admission. He could not talk five minutes to a person without "putting his foot into it." He was always making mistakes—he was always sizing up his man just to the opposite to what he was.

One day he took himself off to one side and had a quiet, serious chat with himself. "I am not hitting the bullseye right," he told himself. And he decided it was not his customers that were HARD PROPOSITIONS but that the fault lay with himself in not being able to UNDERSTAND his customers.

So he started in to make a study of people. He found out that a man's features were an index to his nature. He learned that the shape of the nose, the tilt of the chin, the size of the ear, the height of the forehead and the breadth of the face told the story of his fellow men just as plainly—just as easily, as if it had been printed in type.

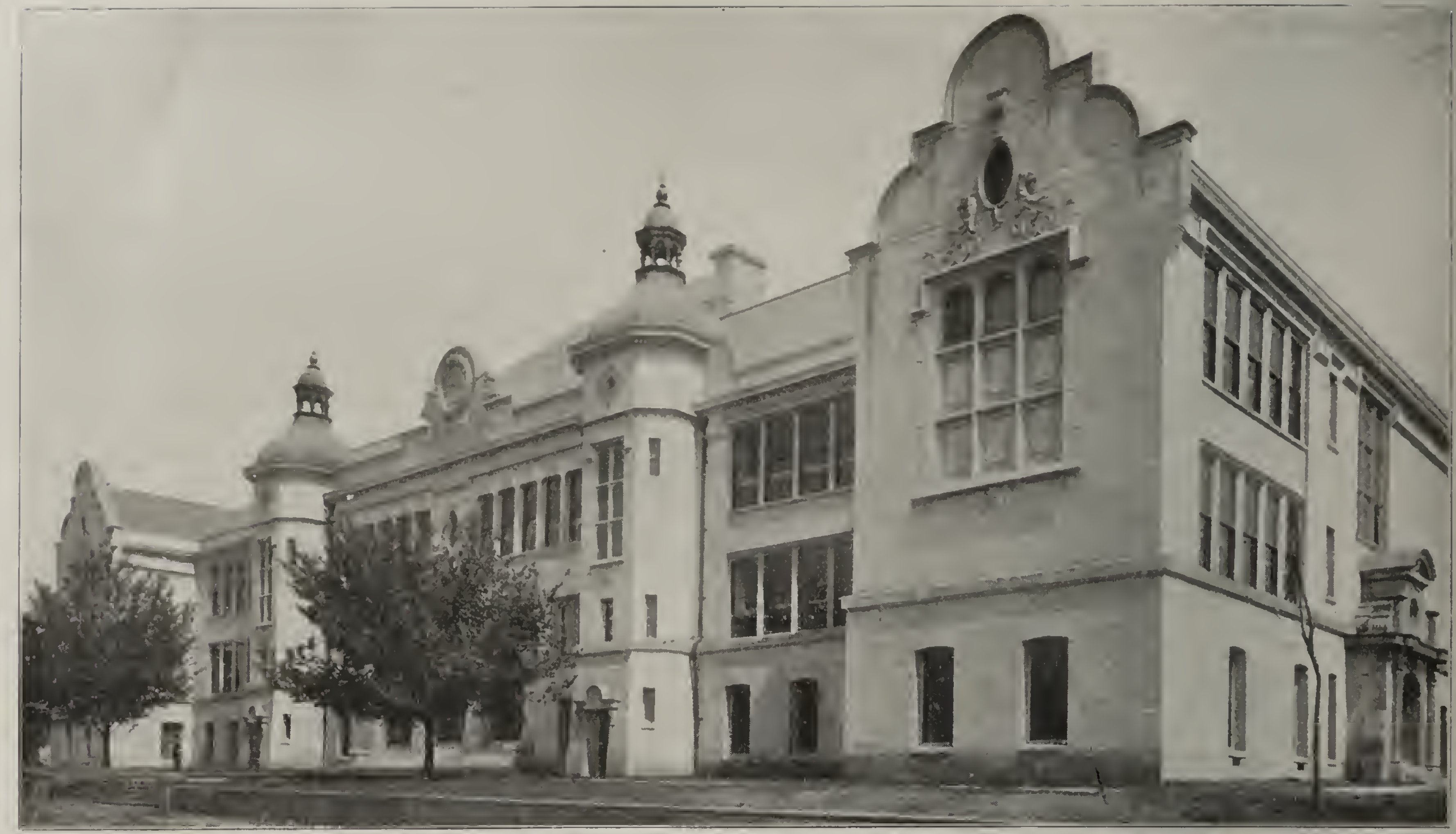
He discovered that if a man's mouth drooped at the corners he was apt to be of a moody disposition. If it tilted upwards he looked at life in a more hopeful manner. If the lips were thin and compressed—forming a straight narrow line, there was selfish cruelty.

If the eye was a cold, steely gray and the chin prominent and the jaw firm and square, he knew he had a man before him that would want to go right into matters without preliminary conversation or a waste of words.

If his customer had large, cheerful eyes that had smiling wrinkles in the corners, if he had thick lips and a round, firm face, he knew this man would enjoy a good story and he would lose no opportunity to get "homey" with him.

This salesman did not cultivate this ability to read a man's character—to ascertain his temperment. in a day. It took him years and he says he is still learning. But he received a benefit the first day he began to observe men, and, as the days grew he grew in power of discernment—in tact, in diplomacy.

Any of us may do the same thing. Any of us may reap the same benefit. It is just a case of cultivating the habit.



The Franklin School at Oakland, Cal.

A Distinctive School Architecture

ONE of the many fine brick school buildings that are making Oakland, Cal., famous throughout the country is the Franklin school, an illustration of which is given herewith. It offers a good example of the style of architecture employed in school house work in Oakland, containing twenty class rooms, beside an assembly hall, lunch room and library. It is faced with light colored pressed brick and is trimmed with terra cotta. The interior construction is entirely of steel and brick. The history of this building is interesting. Plans were drawn by Lewis Stone, then of Oakland, but since of Stockton, Cal., and work was started several months prior to the earthquake of April 18, 1906, by which time the mason contractor had nearly completed his work.

In Oakland the "quake" was much less severely felt than in San Francisco and was not followed by fire. Nevertheless, sufficient damage was done to the unfinished building to necessitate considerable reconstruction. The original contract price had been $145,500, but in rebuilding, the Board of Education determined to make the structure as nearly as possible a Class A building, added other methods of flooring and reinforcing than those originally contemplated, and after adjusting all of the losses sustained by the original contractors, relet contracts which brought the total cost of the building up to $204,345.

The building is situated in what was, at the time of construction, the eastern part of the city, on Ninth Avenue, between Fifteenth and Sixteenth Streets.

URGES SYSTEMATIC FILING OF ORDERS.

American Face Brick Association Asks Brickmakers and Dealers to Adopt Uniform System.

In a bulletin recently sent members of the American Face Brick Association, Secretary Hollowell made a strong plea for a more systematic form of correspondence between brickmakers and dealers (so far as it applied to orders for brick), than is now the rule. He put particular stress on the difficulty that beset the comparatively few brickmakers and dealers who had installed a proper system, caused by the seeming impossibility of securing the adoption of the rule "Write a separate letter on each subject." It is discouraging to the man who tries to keep his files in such shape that they may be of real value to him, to have an unfilable letter come to him—unfilable because relating to two or more different subjects (or orders) it cannot be filed in one place or the other without being copied in whole or part.

In the opening paragraphs of the bulletin, Mr. Hollowell says, "This association was organized not only to reform the other fellow, but also to have a medium through which to get all its members to adopt systems and business methods which will increase the efficiency of each individual, and thereby put money in the pockets of all. As with charity, so reform should begin at home."

He suggests that every order placed by a dealer with a manufacturer bear the dealer's order number and that the manufacturer, in acknowledging the order, assign it a number of his own. In subsequent correspondence, relative to that order, the dealer will allude to the manufacturer's number, following it with his own, and, when the manufacturer writes, he will give the dealer's number the first place; following with his own order number.

Correspondence relative to operations pending are to bear the name of the building under discussion, followed by the name of the city in which it is to be located and, where possible, by the name of the architect.

Accepted Test
of a Large High Vacuum Condenser

INTERESTING FIGURES SHOW EFFICIENCY OF HUGE SYSTEM INSTALLED BY THE ILLINOIS STEEL COMPANY

By Paul A. Bancel
Consulting Engineer

INTEREST in what is being done by the magnates in other industries is being shown of late by clayworkers who are awakening to the fact that they can gain many valuable pointers outside of their own little world.

Attention is called to a large clayworking corporation which adopted a dryer found in a soap factory with remarkable success.

Mr. Bancel's report on the acceptance test of a mammoth condensing system installed in one of the large steel corporation plants may give some other clayworkers a suggestion.

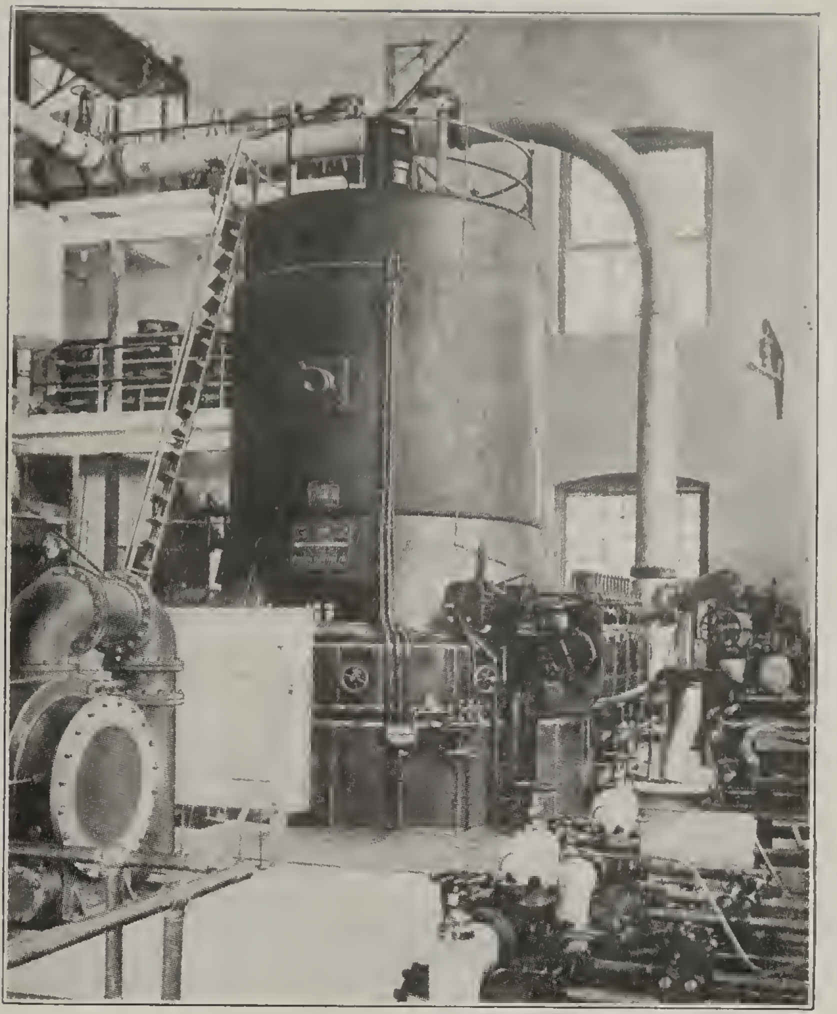
THE data given below is from tests on a condenser of the dry tube base design, manufactured by the Wheeler Condenser & Eng. Co., Carteret, New Jersey, installed at the South Works of the Illinois Steel Co., South Chicago, Ill., in connection with a 7,000 k. w. Curtis mixed pressure turbo generator.

Low pressure steam is supplied by three 2,000 k. w. compound reciprocating engines, which discharge into a header about 100 ft. long. In addition to this supply of steam, the exhaust from blast furnace blowing engines and auxiliaries is used up to a capacity of 200,000 to 250,000 lbs. per hour. High pressure steam is used to carry the load in case of a deficiency in the supply of exhaust.

The condenser tube surface is arranged in two sets of banks on either side of the centre line with dry plates at several elevations on each side draining outward towards the shell. They divide the tube surface into a number of compartments, designed to give the most efficient and even distribution of the steam to all of the surface.

There are about 6,000 one inch tubes making in all about 25,000 sq. ft. of surface. The circulating water makes two passes through the tubes entering at one end and passing through the lower bank of tubes on both sides of the centre, returning through the top bank to the discharge.

The circulating water is drawn from Lake Michigan through an intake tunnel 150 ft. long and discharged to a sewer. The circulating pump is a Wheeler 36 inch double suction volute pump, operating at a speed of from 100 to 135 r. p. m. driven by a 20 x 24 Cooper Corliss engine, which may be seen in the background of the photograph. The dry air pump is a 14 x 36 x 24 Wheeler Tandem rotative dry vacuum pump and has shown remarkable efficiency. Two five inch centrifugal hot well pumps are installed, driven by 24 H. P. steam turbines.



The following vacuums were guaranteed with temperature of cooling water 70 degrees F, and the quantity of water, not more than 34,000 gallons per minute.

Vacuum	Load in lbs. of Steam per Hour
28.3	210,000
28.5	185,000
28.6	150,000
28.7	120,000
28.9	70,000

Tests were made by the steam engineering department of the Illinois Steel Co. to check the guaranteed values, inlet circulating water at 73.4 to 73.7 degrees F. being used. In calculating the final results, the performance was corrected to 70 degrees water. Referring to these tests, the following items should be noted:

The remarkably high vacuums obtained with cooling water at 73½° temperature.

The small difference in temperature between the discharged condensing water and the steam, that is, 4° to 10°.

The high coefficient of heat transmission; 550 B. t. u. per sq. ft. per hour per degree difference in temperature with a load of 210,000 lbs. of steam per hour.

The greatest load on the condenser was 210,000 lbs. of steam per hour, but it is evident from the test that a load of 250,000 lbs. of steam per hour would have carried with 28 inch vacuum and 70° water. This is equivalent to 10 lbs. of steam per sq. ft. of surface, and under these conditions, the coefficient of heat transmission would have been about 600.

The coefficients of heat transmission are calculated on the basis of 980 B. T. U. per pound of condensate, and by the logarithmic formula for heat transmission.

In the test on the Wheeler Dry Vacuum pump the mechanical efficiency of 83.9% obtained, is remarkably high.

A log of a month's performance of this condensing outfit, covers performance in the month of January with inlet cooling water down to about 34° F. The performance is markedly consistent.

Gaseous Fuel in the Clay Plant

EXPERT DISCUSSES SYSTEMS IN USE AND POINTS OUT ECONOMY UNDER FAVORABLE CONDITIONS

Producer gas for fuel is comparatively new in the clay product field, although having been used in other industries for years. Many of the recently installed plants are equipped with outfits and many of the older plants, learning the lesson of economy, have installed producer gas systems. Despite this activity, however, the average clayworker knows little or nothing of the use of gaseous fuel. Mr. Hartman, a consulting engineer with a wide experience in producer gas systems, has prepared an article on the various kinds of gas and their comparative value as fuel, which will prove profitable to the clayworker seeking information on this subject.

Mr. Hartman was formerly managing engineer for the H. Kopper Co., the well known German concern which has such a large clientele in this country. He is now consulting engineer for the Republic Iron & Steel Co., of Youngstown, Ohio, and is looked upon as an authority on gaseous fuel.

By W. E. Hartman

Consulting Engineer, Republic Iron & Steel Co.

W. E. HARTMAN.

THE brick industry is as conservative as other lines, and this conservatism cannot be criticized too severely for in conservatism lies safety. But a change in fuel methods is now due. We are up against a changed situation in the fuel oil market, and the brick manufacturer is interested now intensely in more economical sources of fuel for the burning of his product.

Having used solid fuel in the form of coal and liquid fuel in the form of oil, we naturally turn to the ideal form of fuel, namely gas. There are various grades of gaseous fuel available, and any particular plant because of its location with respect to the price of gas making materials, must be studied by itself.

We may use producer gas made from anthracite coal or from coke or from bituminous coal, blue water gas made from anthracite coal or from coke, by-product coke oven gas, or in some especially favored localities, natural gas.

We will not discuss the use of natural gas. It is a clean gas with a heating value of 900 to 1,000 B. T. U.'s per cubic foot. It is unnecessary to say that if natural gas is available with a reliable supply and at a reasonble price, by all means use it as long as it lasts.

Blue water gas is only to be considered where coke or anthracite coal are very cheap. The heating value is about 300 B. T. U.'s per cubic foot, and it is a very desirable fuel burning with sufficient heat to meet all conditions in the brick industry. To make one thousand cubic feet of blue water gas requires about 40 lbs. of coke or anthracite coal and 40 lbs. of steam. To produce this steam would require about 7 lbs. of coal. Therefore, one thousand cubic feet of blue water gas carrying 300,000 B. T. U.'s would require about 47 lbs. of solid fuel or about 7½c with anthracite coal or coke at $3,00 per net ton or 12½c with fuel at $5.00 per ton. The labor and interest on the investment would bring these figures up to at least 10c and 15c respectively. One thousand cubic feet of this gas is equivalent in heating value to about two gallons of fuel oil. You readily see that blue water gas is applicable in only very few parts of the country.

In recent years the development of gas producers has taken rapid strides and to-day there are a large number of different types of producers to choose from. Essentially a gas producer is a shell usually brick-lined, with an opening at the top for the feeding of fuel and an opening at the side near the top for the withdrawal of gas. There are a number of mechanical producers on the market. These avoid the labor of feeding the fuel and of poking the fuel bed and of removing the clinkers and ashes. They are preferable in every way, and well worth the additional cost. Steam and air are admitted at the bottom and the ashes formed are withdrawn from the bottom. The steam and air unite with the carbon of the fuel to form a combustible gas. This gas usually has a heating value of 120 to 160 B. T. U.'s per cubic foot and if made from bituminous coal, it carries with it tarry vapors.

Producer gas is extensively used in many different industries. It is an excellent fuel and with kilns properly designed, any desired temperature may be carried. Producer gas is used as raw hot gas in most cases. In that condition there is the advantage of using the sensible heat of the gas as well as the heat from the combustion of the tar vapors carried by the hot gas. However, in many cases, it is necessary or advisable to clean the producer gas.

For use in gas engines, the gas must be clean. Also wherever it is necessary to distribute the gas to a number of scattered furnaces or to points located so far from the producer that the gas would lose its sensible heat by radiation and would deposit its tar in the pipes or flues due to the cooling action, then it is advisable to clean the gas and distribute cold gas through small pipes instead of through large brick-lined flues, under any desired pressure.

In the cleaning process the tar is recovered as a valuable by-product amounting to about 10 gallons per ton of coal at 3 cents per gallon. The cold clean producer gas can be distributed more easily and can be burned under perfect control; but it has a lower heating value than the hot, raw gas loaded with tar vapors. This lower heating value limits somewhat its field of application. But any desired temperatures may be carried in a kiln using even clean producer gas provided the furnace is properly designed. If provision be made for heating the air required for combustion or heating both the air and the gas, taking the heat for this purpose from the heat in the waste gases going to the stack, the highest working temperatures may be attained.

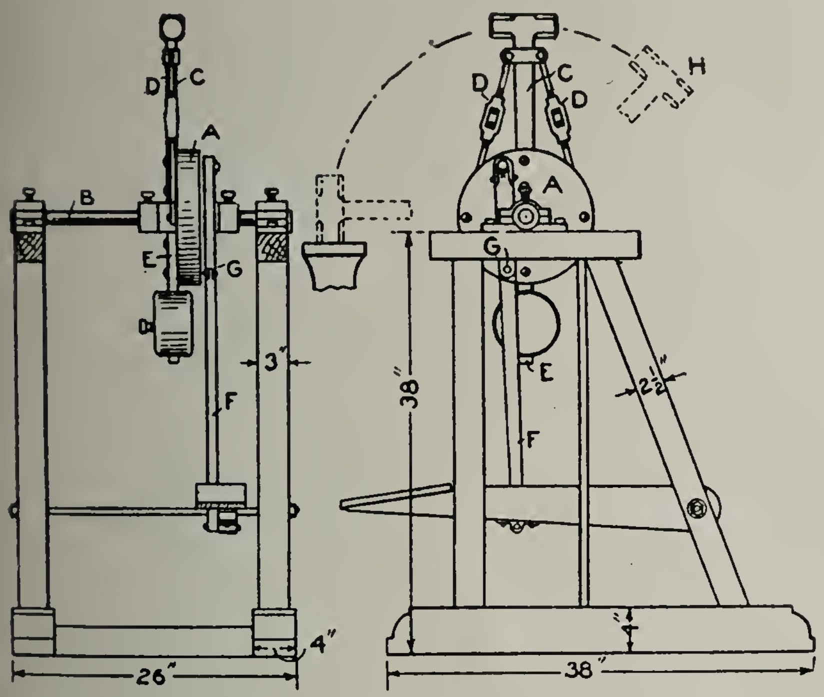
However, there is a demand for a gas producer which will successfully make gas of a higher heating value than those now on the market. If producer gas could be had with a heating value of say 250 to 300 B. T. U.'s per cubic foot, this gas would find wide application because it could readily be used where oil or coal is now used, without rebuilding the kilns to provide recuperators or regenerators to recover the heat from the waste gases of the kilns. Producer gas of 130 B. T. U.'s per cubic foot can be made for 1½ to 2c per thousand cubic feet equal to 130,000 B. T. U.'s.

Where the installation is large enough or where a number of installations are located within a narrow radius, the most economical fuel is undoubtedly coke oven gas. In many localities a by-product coke oven plant will pay at least 25 per cent on the capital invested after deducting all charges; and without any credit for the surplus gas. This gas has a heating value of from 500 to 600 B. T. U.'s per cubic foot, and it is a clean cold gas easily distributed and controlled. Any desired temperature may be attained and the gas may be burned in any furnace previously using oil or coal.

The brick industry is gradually extending the use of gaseous fuel. Continuous kilns have long been operating with gas producers. Open scove brick kilns have been heated successfully with raw hot producer gas. One of our large silica brick plants with round kilns is successfully using coke oven gas. Gaseous fuel has been found to be ideal principally because of the ease of temperature regulation; and now that the fuel market demands changes for economical reasons, we may hope to see gaseous fuel, in the form of either producer gas or coke oven gas as the local conditions may dictate, find general application in the brick industry.

An Inexpensive Foot Power Hammer

A cheap and efficient foot-power hammer is shown in "Popular Mechanics" and may be constructed on the lines of the accompanying illustration. It will prove a valuable addition to the ordinary shop equipment for welding or heavy hammering. Sufficient dimensions are given to enable the owner of a small shop to construct one suitable for his needs by making the necessary changes.



The main working parts consist of a cast-iron wheel, A, 12 in. in diameter, with a long hub, which turns on the stationary axle B, between two collars, and carries the hammer and counterweight, together with the crankpin and connecting rod to the foot treadle. These parts are supported on a frame made of hard wood, as shown.

The bar C, carrying the hammer, is solidly bolted to the wheel A and is braced with two rods, DD, having turnbuckles. The bar is made of steel, ⅝ in. thick, 1½ in. wide and about 16 in. long. The bar E, carrying the counterweight, is securely bolted to the opposite radius of the wheel. The weight attached to the end of this bar should be about twice the weight of the hammer, and fitted so that it can be adjusted to the proper distance from the center of the wheel to bring the hammer quickly back to the position shown.

The connecting rod F is jointed at G to allow the crankpin to pass over the center and the hammer to recede toward the position shown by the dotted lines at H for a longer stroke; the upper end of the connecting rod forming a rocker arm to bring the crankpin back over the center.

MAGNESITE PRODUCTION INCREASES.

Gain of More Than a Thousand Tons—California Only Producer in the United States.

According to inquiries made by the United States Geological Survey of numerous magnesite mine owners in California who did not work their properties last year, the belief is expressed that on the opening of the Panama Canal they will be able to ship the magnesite by sea at a profit and will then open the mines and find a market. There are numerous workable deposits of magnesite in California, but most of them are idle at present.

Outside of the State of California no magnesite is produced in commercial quantity in the United States. In 1912 the California output was 10,512 tons of crude ore, valued at $105,120, compared with 9,375 tons in 1911, valued at $75,000. The demand for the domestic product is restricted to the Pacific coast, it being unprofitable to ship the material at present railroad freight rates to the point of largest consumption in the United States.

How Cox Got Into the Game

SYNOPSIS OF PRECEDING INSTALLMENTS.

A dilapidated clay plant in Ohio is left Albert Cox, a young insurance solicitor, by his grandfather. Cox visits Mauryville with the idea of selling the plant to some one. Selling is his profession and he argues that any one who learns the principles of salesmanship should be capable of selling anything. He finds, however, that the clay plant has not been run for years and that the clay supply is exhausted. The machinery is antiquated and Sawyer, the old foreman, tells him it is only good for junk. Cox considers cutting up the land into city lots, but the gaping holes in the clay pit soon convince him that his task is hopeless, and he is about to give up in despair when he meets Charlie Simpson, a student at the state school of ceramics, who is home for the summer vacation. Simpson, in exploring the neighboring hills, finds an excellent deposit of clay on one end of the Cox estate. Cox becomes interested in the young man's enthusiastic report and, despite Sawyer's despairing advice, plans to turn the discovery to practical use. He obtains an option on the adjoining property and offers to sell his holdings to Brown Bros., a prosperous firm of clayworkers in a nearby city, which is seeking a new location. The eagerness with which the Brown Bros. take up his offer suggests to Cox that young Simpson was right when he said the clay was of an unusual quality, and getting a sample brick made he slips into Cleveland to consult an architect. It is his intention to verify young Simpson's claims with the idea of establishing a value on the property. To his surprise the architect is very enthusiastic over the brick and offers to take 200,000 on a 60-day delivery. On the impulse Cox agrees to furnish the brick. A visit to other architects gives him tentative orders amounting to 1,000,000 brick. This decides Cox and he determines to go into the brick business. He starts out to rehabilitate the old plant with the assistance of Sawyer and young Simpson. After a visit to the Steinway Brick Machinery Co.'s plant at Pressville, Cox selects his equipment and for two weeks work is pushed night and day in the new plant. The severe strain soon tells on the men and Sawyer and young Simpson finally clash. Cox interests a Chicago dealer in his product and closes a big contract with him whereby he finds it necessary to plan for an enlargement of his plant. He makes arrangements with a machinery house to supply him with additional equipment when he needs it. Late one night Cox discovers his plant on fire and seeing a fleeing figure shoots. It develops that he has shot Sawyer. The old superintendent is seriously wounded and is in danger of losing his voice, but finally recovers under Cox's careful nursing and it develops he was wounded in his attempt to capture a discharged employe who sought revenge with the torch. In the course of time the first burning is completed and Cox proceeds to load his cars for the Cleveland shipment. A strike ties up all the railroads and Cox is apt to lose his sale through failure to deliver on contract time. He hits on a happy idea. He orders 15 motor trucks and proposes to utilize them in rushing his brick to market.

SAWYER'S conversion was a decided surprise to me. It is true now that I recall the fact that for several days he had been developing the symptoms and had I given him a little closer attention I might have noted the growing interest he was showing in the plants we visited.

The winning of the old superintendent over to modern methods and machinery taught me a lesson that I have never forgotten and to this day I profit by the suggestion given me in his case. Sawyer is no different from many another brickmaker who sticks close to the job and who sees little of what his neighbor is doing and therefore gets into a rut. I have made it obligatory on the part of my superintendents and other executives that at least once a year they shall take a few days' vacation at my expense and visit one of the more progressive plants. The new ideas they bring back more than repay me.

When Cox and myself returned to Mauryville we talked over our trip and we made up our minds to follow Simpson's suggestion and employ an engineer. As DeJones had installed the Iowa plant and we were satisfied with the work he had done there I told him to go ahead and submit his plans.

When DeJones arrived to make a preliminary survey of the situation he decided that the new plant should be

BEING THE STORY OF A YOUNG MAN WHO FELL HEIR TO A RUN-DOWN CLAY PLANT

By Iverson C. Wells

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erected across the road from the old plant and close to the shale bank. He spent two or three days going over some of the details with us and returned to his office to work up tentative plans.

In the meantime I made a two-days' trip into Cleveland to see some of the contractors from whom I had the promise of several good orders providing I could deliver the same brick I had shown them in the sample.

Allison—one of the largest contractors in the Middle West, was the first to be visited. I took him around to see Henderson's building in which my first "Goldfields" were being used. The brick work was pretty well advanced by that time and I noted with considerable pride the way my brick "sized up" in the wall.

"You've certainly got a pretty brick, Cox," Allison told me as we started back to his office. "If you will make that for me in a rough texture I can use a quantity for a bunch of community houses I am to build on contract in one of the suburbs."

I assured him we had planned to make a single and double texture brick and showed him samples I had with me. Later in the day I got the actual order and had two months in which to make shipment.

I did not have such easy sailing with some of the other dealers. As a matter of fact I found pretty stiff competition and the dealers were not eager to listen to me. Most of them had contracts with other plants and refused to consider me or the "Goldfields."

I made up my mind that if I sold brick in any quantity in Cleveland I must make the people want "Goldfields." Accordingly, before I had returned to Mauryville, I had closed a deal with an advertising agency to handle a small campaign for me in the local papers. My idea was to let the people know that I was making "Goldfields" and that "Goldfields" were the brick to buy above all others. If the buying people wanted my brick I figured dealers would see that they got them and my theory proved to be right for it did not take the advertising long to create a demand and one by one I heard from the fellows that had turned me down a short time before.

Everything was running along nicely at the plant until one morning Sawyer and Simpson had another clash. Ever since their last quarrel Simpson, acting on my advice, had steered clear of the old superintendent and had given him little opportunity to show his enmity. This morning, however, Simpson, who had been looking after the kilns in a way opened up one and discovered a bad run of brick, caused by careless firing. The fault really was that of one of the burners who had been drinking, but as Simpson had been placed in charge of the kilns he was in a way responsible. Sawyer, waiting for some sort of chance like that to berate the youth, spoke rather roughly to him.

Simpson kept his head but Sawyer worked himself into a frenzy. I was going across the yard when I heard Sawyer's loud voice and, noting the belligerency in his tone, hurried over to see what the trouble was about. I got there just in time to see Simpson turn suddenly on Sawyer.

"Mr. Sawyer, you use that word again and I will not be responsible for my actions!" he declared coolly but determinedly. The next moment Sawyer, with an oath that could be heard clear across the yard, repeated the epithet and at the same time rushed at Simpson. Before I could reach them Sawyer had struck Simpson a vicious blow, dropping him to his knees and was on top of him. One of the yard men reached Sawyer the same time I did. Between the two of us we managed to pull off the old superintendent.

Simpson was full of fight but we persuaded him to go into my office and he reluctantly did as suggested. As he turned to go, however, he shook his fist in the old superintendent's face.

"I'll make you eat those words if it takes ten years!" he exclaimed. Sawyer looked as if he was about to spring at the youth again but turned suddenly and walked away.

I met Simpson later and told him I was sorry to see him lose his head in the manner he had.

"You should not pay any attention to Sawyer," I told him. "You know what a hothead he is."

"I know I should ignore him, Mr. Cox, but a saint could not stand any more than I have. I got to the point where I could not let it go any farther—and—then there was the insult—no man could let that pass unnoticed."

I advised him to choke back any resentment he had and to give Sawyer a wide berth.

"I'll do the best I can, Mr. Cox," the youth replied, offering me his hand.

That night I was startled about 9 o'clock by a shot out in front of the house. I went to the door and listened and saw someone running across the vacant lot that separated my place from that of the Widow Simpson's. Hearing groans I lighted a lantern and ran out to the road. I found Sawyer lying in the middle of the road with blood pouring from a pistol wound in his side. He was still conscious but I could see he was seriously wounded. Crying for help I rushed to the telephone and called a physician. By the time I had aroused someone to assist me Sawyer gave a gasp and his head fell back limp as we were carrying him into the house. He died without a word as to who his assailant was.

(To be Continued in Our Next Issue.)

The Letter Box

Cascade, Va., Aug. 15, 1913.

"Brick and Clay Record,"
Gentlemen:—

I want to thank you for the copies of your paper recently received. For twelve months I have been trying to run a brick plant without your journal and had become "so hungry" when these copies arrived that I tried to devour them, advertisements and all, before attempting to do anything else.

Enclosed find $2.00 for which please send "Brick and Clay Record" for twelve months, beginning with next issue.

Yours truly,
R. A. Fontaine, Sec'y,
Watson-Fitzgerald Corp.

A letter from E. J. Mehren, editor of "The Engineering Record," takes "Brick and Clay Record" to task for an error in the article on the Dunn wire-cut-lug paving block which did that journal an injustice. Mr. Mehren objects to the sentence which quoted "The Record" as indorsing the Dunn block "as the ideal paving material." What "The Record" did say was that the Dunn block was an ideal paving block and the word "block" should have been used instead of the word "material." Not wishing to have "The Record" appear in a false light we print Mr. Mehren's letter in full:

> My attention has been called to the article on Wire Cut Lug Block in your issue of Aug. 15, and particularly to the end of the first paragraph in italics in which you asy that this material is endorsed by the Engineering Record "as the ideal paving material." I believe that your enthusiasm for paving brick led you to a distortion of our editorial comment which discussed not paving materials in general but merely brick for paving purposes.
>
> As you will undoubtedly grant upon reflection the word ideal is merely relative, the adequacy of a pavement being determined entirely by conditions. It is impossible, therefore, to say that one material is the ideal—if that be taken to mean the best under all conditions and circumstances. Even the most ardent advocate of brick for paving purposes would hesitate to make the statement which you have credited to the Engineering Record.
>
> I trust that you will give proper publicity to this letter through your columns.

Another reader, G. H. Tefft, secretary of the International Clay Products Bureau of Kansas City, Mo., also takes us to task for our failure to give hollow tile block its just dues in the article describing the recent tests made in New York. Mr. Tefft says:

> We have read, of course, with great interest, the comparative tests of the three kinds of floor arches on page 364 of your August 15th issue. It appears to us, however, that you could turn this test to better account if, instead of comparing the cinder concrete and the hollow tile arches in the manner that you do, offering excuses as to why the clay block did not turn out better, you emphasized the great difference between the clay and the gypsum and called especial to 150 lbs. per square foot during the fire, the gypsum attention to the fact that the gypsum arch was not loaded the same as the others.
>
> "The Engineering News" gives a very much better account of this than you do. First of all it calls particular attention to the fact that, whereas the cinder concrete and hollow clay block arches were loaded slab was loaded to but half of this amount. After the fire and water test, you state simply that "On the following day when the 600 lb. load test was applied the terra cotta arch took the full 600 lb. test, showing that in an actual fire, the arches, although fractured in places, would have been strong enough to warrant repairs and be used again. The cinder concrete arch also stood the 600 lb. test, but in the case of the gypsum arch there was a slight deflection partly due to the fact that this arch was two weeks younger than the others."
>
> According to "the Engineering News" account, this arch did not merely deflect, but failed absolutely under a load of 496 lbs. per square foot. Was "the Engineering News" wrong in this?

At the time the article referred to was printed in this journal the official report had not been made public. The gypsum test, as given in the official report, appears in the "Question and Answer" Department on Page 578 of this issue, to which we refer Mr. Tefft.

New Plants and Additions.

Mohr-Minton coal and brick properties, which have been idle for the last five years, at McArthur, Ohio, have changed hands. R. R. Cutler, of Belpre, Ohio, is the largest stockholder and will be general manager. It is proposed to spend more than $100,000 at once, overhauling the brick plant and in the installation of new machinery and equipment.

R. L. Dennison, representing a Missouri corporation, inspected clay properties at Port Arthur, Texas, a few weeks since, and expressed intentions of building a 50,000 to 75,000 capacity brick plant there.

Questions and Answers

A DEPARTMENT FOR THE SOLUTION OF THE KNOTTY PROBLEMS CONFRONTING THE CLAY WORKER

This department was inaugurated to be of material benefit to the readers of "Brick and Clay Record" and no charge is made for the service given. The advice of the world's recognized authorities in ceramics is offered to clayworkers who are invited to avail themselves of the opportunity to have their problems solved here. Should a reply be desired by letter enclose a stamped and addressed envelope for reply.

Farm Tiling in Quicksand.

In the Sept. 1 issue of "Brick & Clay Record" a question was published as "187-Illinois," in which the correspondent asked for the best method of laying tile in quicksand. An answer was published, but a few hours after the journal had gone to press, a letter was received from M. F. P. Costello, Associate Professor of Agricultural Engineering, at the Agricultural Experiment Station, Iowa State College, Ames, Iowa. Professor Costello's letter is as follows:

"When quicksand is encountered in laying tile drains some means must be devised to prevent its entrance into the drain through the joints. To secure true alignment it is some times necessary to place a board or plank in the bottom of the trench upon which are laid the tiles. The joints should then be covered with some material which will allow the entrance of water but which will exclude the sand.

"Tar paper, straw, coarse hay, grass, or small bundles of twigs laid upon the tile and covered with clay are usually effective. When the straw or other material decays the clay will prevent the entrance of the sand. The decaying matter will prevent the clay adhering to the tile, which would retard the entrance of the water.

"Gravel which has particles too large to enter the joints is the best material when it can be secured. A few inches of this material covered with sand will prevent the quicksand from reaching and entering the joints.

"Cinders may be used instead of gravel if they are of good quality. They should not disintegrate by the action of the water on them, and be coarse enough to be unable to enter the joints. They should contain enough fine material to be an effective barrier against the entrance of the quicksand.

"Where the quicksand occurs in a pocket, sewer tile with cemented bell and spigot joints should be used. The water will escape along the tile and through the sand until it finds entrance at joints outside of the quicksand. If the extent of the quicksand is too great for this method, sewer tile with bell and spigot joints uncemented, and covered with gravel, surface soil or some of the other materials named will allow the water to escape. Some times a double line of drain tile is put in place. A tile large enough to be slipped over the size used in the drain is placed around the drain in such a way that the two sizes break joints. This interferes but little with the passage of the water and is effective in obstructing the passage of quicksand into the tile. In special cases the drain might be bedded in concrete if the distance through the quicksand is not great.

"All efforts to prevent the entrance of the quicksand may be made fruitless by poor methods in other respects. Substantial sheathing made sand proof by any means available is necessary to prevent the disturbance of the drain by caving. The backfilling should be carefully done, and some material other than quicksand used for a depth of one or two feet if possible. Where quicksand has been placed directly on the drain, cases have occurred where the drain was "floated" or raised out of place by the quicksand. A plank placed on top of the tile held down by cross-pieces sufficiently weighted or anchored into the sides of the trench will prevent this heaving."

Questions Action of Gypsum Arches.

199. *Texas.—We note in the Brooklyn Test recently reported by your journal, that gypsum block was one of the materials subjected to this test. From the reading of your article it would appear that this gypsum block, after being subjected to* 1,700 *degrees of heat, then received the direct water treatment without injury. Our experience here is that gypsum block, when heated and having water applied directly to same, disintegrates; we would be glad to have you clear this point up, as to whether the gypsum block received the direct water, or merely the indirect cooling effect of the water.*

The following extracts from the official report made by Harold Perrine, C. E., in co-operation with the Department of Buildings of the City of New York, will answer our correspondent fully, particularly the italicized phrases (italics being ours).

"The system to be tested forms the roof of the test house, which structure is essentially a cinder-concrete oven of permanent construction. Properly supported upon piers 2½ ft. from the ground is a grate composed of railroad rails and wire mesh, about 280 sq. ft. in area. The vertical distance from the grate to the roof is about 9½ ft. The floor system to be tested is supported by steel I-beams, resting on the tops of the walls, spaced at distances suitable to the span or spans under test, and having a clear span themselves of about 14 ft. Ample draft openings and flues are provided to facilitate the control of the fire. The structure, as well as the methods used in the herein described test, conform to the specifications adopted by the Bureau of Buildings of the City of New York and by the American Society for Testing Materials.

"The purpose of the test is to determine the effect of a continuous fire below the floor, lasting four hours, *at an average temperature of* 1,700 *degrees Fahrenheit,* a temperature generally conceded to be that of a burning building, the floor carrying, at the same time, a distributed load of 150 lbs. per sq. ft. At the end of the four hours, *the under side of the floor, while still red hot, is subjected to a* 1⅛-*in. stream of cold water, through a hose at short range, under a* 60-*lb. pressure, for five minutes.* The upper side of the floor is then flooded with water at low pressure, *and afterwards the stream is applied at full pressure to the under side for five minutes longer.*

"During the fire, the cinder concrete and terra cotta arches carried 150 lbs, per sq. ft., but the gypsum arches carried only 75 lbs. per sq. ft.

"Water was supplied by firemen with an engine detailed from Fire Station No. 238, Greenpoint, Brooklyn, N. Y.

"A pressure of well over 60 lbs. was maintained at the nozzle. The stream *was thrown back and forth over the ceiling and not allowed to strike continuously in one spot.*

"The age of the cinder concrete and of the terra cotta arches was 29 days; the age of the gypsum arch was 14 days. None of the arches showed appreciable deflection under the initial load.

"The protection to the reinforcement and to the supporting I-beam flanges in this bay (gypsum) was entirely removed where the water had full play. Toward the front of the house, where this condition did not obtain, the gypsum covering remained. The material above the wires was softened, deeply scored, and presented a discolored, smoky appearance. Four hours of fire produced a deflection of only one-sixteenth inch.

"Both the cinder concrete and terra cotta arches recovered after cooling, whereas the gypsum settled somewhat. The cinder concrete slabs withstood the load of 600 lbs. per sq. ft. with slightly more than one-quarter inch deflection. A deflection of less than three-quarters inch was noted in loading the terra cotta arch to this amount. *When the load upon the gypsum slabs had been increased to 450 lbs. per sq. in., the total deflection was five-eighths inch. At 496 lbs. per sq. in. failure occured, and the slab was propped from beneath to prevent its total destruction."*

From the above it would appear that the gypsum arch was washed away to the point where the reinforcement existed, but that it protected this reinforcement and the I-beam flanges during the fire. The reason for the initial load being lower than that imposed on the cinder concrete and terra cotta arches, was that a gypsum arch was constructed at the same time that the cinder concrete and terra cotta arches were built, but some irregularity in the method of construction (which was admitted by those making the tests) necessitated the tearing down of the first arch and the rebuilding of another, fifteen days after the original construction and fourteen days before the test. The allowance of fifty per cent in the initial load for age has a relation to the final strength of the arch after the test, and must be taken into consideration in that connection. It is admitted that gypsum sloughs off, or "flakes" on the surface, when cold water is applied to a red hot slab, but this has been known to happen to hollow clay tile, in which surface cracks, "pops" and "flakes" are apt to occur under the same conditions.

Wants Information About Exhaust Fans.

175. *Ohio.—How large an exhaust fan is required to remove the moisture from a twelve track waste heat dryer, using a 9 ft. blower at the dry end? At what speed should it run? Is the blower fan large enough for a dryer of that size? What grade should be given the tracks in the dryer, to permit the cars to run down by gravity?*

Can any "Brick & Clay Record" reader answer the questions the correspondent asks?

"Water Has Salty Taste."

In the August 1 issue, "Brick & Clay Record" published a question which had been asked by "No. 152 Alberta," relative to the water at his plant having a salty taste. Our correspondent was advised to secure an analysis of the water, which was done. He sent this analysis to this office, where it was submitted to a prominent ceramist and analytical chemist. The analysis was made at the Provincial Laboratory, Strathcona, Alta., and was as follows:

(Expressed in parts per million.)

Hardness	105.8
Total solids	7,364.
Loss on ignition	4,104.
Alkalinity	208.
Free Ammonia	1.61
Albuminold Ammonia	.156
Nitrites	none
Nitrates	.04
Chlorine	2,655.

Hardness = 7.4 grs, per gal.
Solids = 515.5 grs. per gal.

Below is the answer made our correspondent:

We do not think the alkali water will have any serious effect in making brick. We have tested materials using alkali water in the tests without any trouble from the water, not even scumming.

The water in question has 515.5 grains of solids per gallon, part of which is probably carbonate and the remainder chlorides, since the loss on ignition was 4,104 parts in a million and the chlorine was 2,655 parts in a million. 515.5 grains per gallon equal roughly 1.2 ounces per gallon or one-eighth of an ounce per brick.

More than half of this is a chloride, probably sodium chloride or common salt, perhaps some potassium chloride, magnesium, calcium, etc. It would help if we knew the composition of the salts.

In as far as salt has any effect, it is often recommended as an addition, to give the clay better drying qualities. The carbonate salts likewise will give no trouble in such small amounts, as the carbonic acid is driven off and the remaining base combines with the clay to form a silicate.

When one is dealing with alkali water, there is always the suspicion that that scumming may occur, but in the tests we have made there was no trouble with this.

Theoretically one may raise the question whether calcium chloride or any delinquescent salt would not so retard the drying inside the brick as to cause cracking, but this we found not to be the case.

However, it does not follow that our tests will apply to all clays and to all alkali waters, and we would advise you to make up a few brick by hand, using rain water and alkali water for comparison and determine the drying behavior. In our opinion the alkali water is safe.

Wants Address of Chicago Pottery.

198. *Indiana.—Can you give me any information re the sanitary pottery in Chicago or suburbs, recently built or at present under course of construction? It has been built for a Trenton, N. J., firm of sanitary ware manufacturers and here they purpose the "casting" of sanitary goods on a large scale. The kilns I understand had been built about May.*

The address wanted is the Alliance Company, 1924 Clybourne Avenue, Chicago, Ill.

Information Wanted.

The Kulage Brick Works, of Hobart Ind., is in the market for Albany slip clay in carload quantities and wants prices made them on this material.

The Seward Brick Works, Seward, Neb., wants names and addresses of architects who publish books on architecture.

Frontier Brick Works, Niagara Falls, N. Y., wants information relative to the manufacture of hollow brick or the Denison Interlocking Tile, the method of their manufacture and burning.

J. Conrad Hemker, 4123 Wyoming St., St. Louis, Mo., has kaolin that he wants to either dispose of, or use in manufacturing. He wants to know what kaolin is worth and to what uses it is put.

New Methods and Processes

A DEPARTMENT OF TECHNOLOGY
WHEREIN RECENT EXPERIMENTS
AND DISCOVERIES ARE EXPLOITED

Edited by

Charles S. Kinnison

Ceramic Chemist, United States Bureau of Standards, Department of Ceramics

Contributing Editors: Prof. Charles F. Binns, Ellis Lovejoy, C. E., Anton Vogt, C. E.

German Methods of Manufacturing Electric Porcelain Insulators

Hard porcelain for insulating purposes has assumed increasing importance from year to year. Its use has found application in the manufacture of the smaller insulators, where the electrical pressure is low, as well as in the manufacture of the well known high tension insulators, where pressures as high as 100,000 volts are in use.

According to their method of manufacture porcelain insulators may be divided into four distinct classes: (1) those made by jiggering, (2) those made by auger machines, (3) those made by casting and (4) those made by dry press methods.

The first method is the most important, most of the high tension insulators being made in this way, in so far as they are of circular cross-section. The dry press method is of next importance, small insulators of complicated shape and required in large amounts being made by this method. The second method is used for making tubes or such pieces as have same cross section at any point. The casting method is probably of least importance.

The Jiggering Method.

Figure 1 shows a partial cross-section of a familiar style of insulator of the pin type. This is made by the above method.

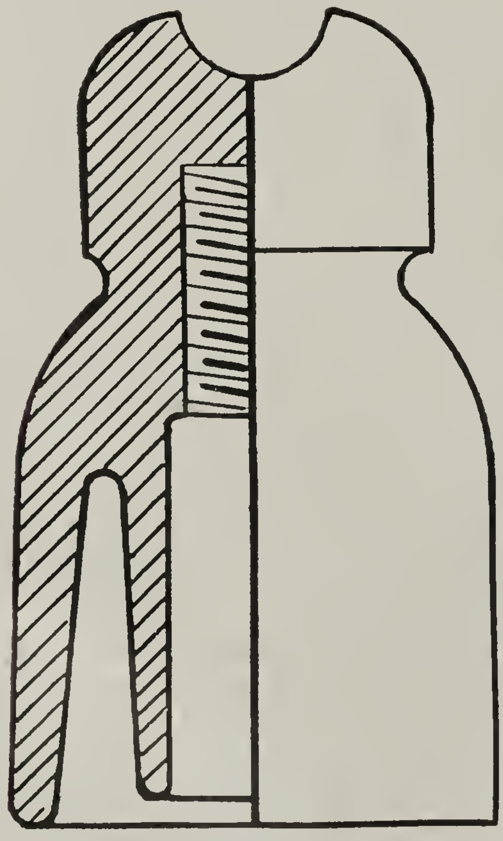


Fig. 1.

The first step is to turn down a plaster model, having the same outer form as the insulator in question, but about 15-20 per cent larger in all dimensions, since the insulator shrinks approximately this amount during burning. For obvious reasons, any undercuts appearing on the insulator are not put on the model. A mold of this is then made by pouring plaster of paris around it in the usual way, and then turning it down to the desired size. If several molds are required, it is customary to pour plaster around this, obtaining a mold of the case. Then when another case is needed, it can be made by merely pouring the plaster, turning being eliminated. This obviously insures molds of a uniform size for the subsequent operations on the jigger wheel.

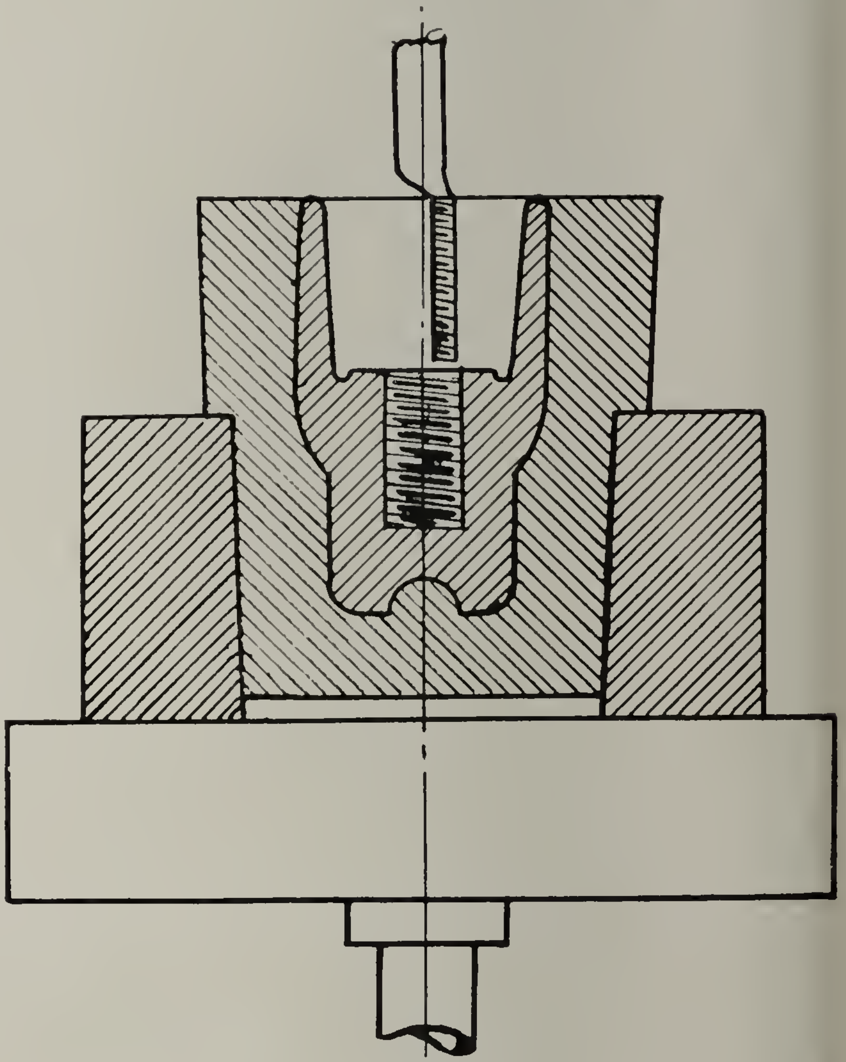


Fig. 2.

The mold being made, the next step is the jiggering of the piece. In this operation the workman throws forcibly into the mold the necessary amount of material, which he has worked roughly into the shape of an inverted cone, being careful to eliminate all air bubbles. The mold is now put in the jigger and a free moving arm let down into the rotating mass of material, having attached to it a steel template, whose outer shape is that of the inside of the insulator. Under this treatment the material conforms to the shape of the mold, its inner shape being given by the template. The necessary thickness of the walls of the insulator is given by having the template clear of the sides of the mold a distance equal to the thickness desired. It is very essential in this operation, as well as in the subsequent cutting of the threads, to have the mold exactly on center with the jigger head. (Fig. 2.)

The threading of the pin hole can be done either with a full or quarter round tap, the latter being the more common.

The inner shell or petticoat is made as a separate piece in exactly the same way as the rest of the insulator, by means of a mold and jiggering. This is then fastened to the rest of the insulator by welding the parts while, of course, both are in a soft plastic condition. The weld, so made, is such that the strength of the united parts is as if the insulator were made of one piece.

After the piece has shrunken away from the mold, it is then taken out by merely inverting it. The insulator is now in a leather-hard condition and the groove at the neck is then made by mounting the insulator on a throwing wheel and putting on the undercut by a suitable cutting tool. While in this position its outer surface is smoothed up by means of a sponge, or some similar means. The piece is now removed from the wheel and thoroughly air dried. For the larger insulators this drying period often covers several weeks.

In high tension insulators the number of welds is made as small as possible. It is preferable to make and burn the different parts separately and to later unite them in the glost fire, or by means of a suitable cement after burning. The latter method is evidently only possible when the insulator is made up of ensheathing bell-shaped parts, as is practically always the case in high tension insulators. (Fig. 3.)

The insulators are subjected to a biscuit burn before glazing. They are then dipped into the glaze tub by means of a felt coverd stick put into the pinhole, which also prevents the glaze from entering same. It is necessary for various reasons to keep the pin hole unglazed.

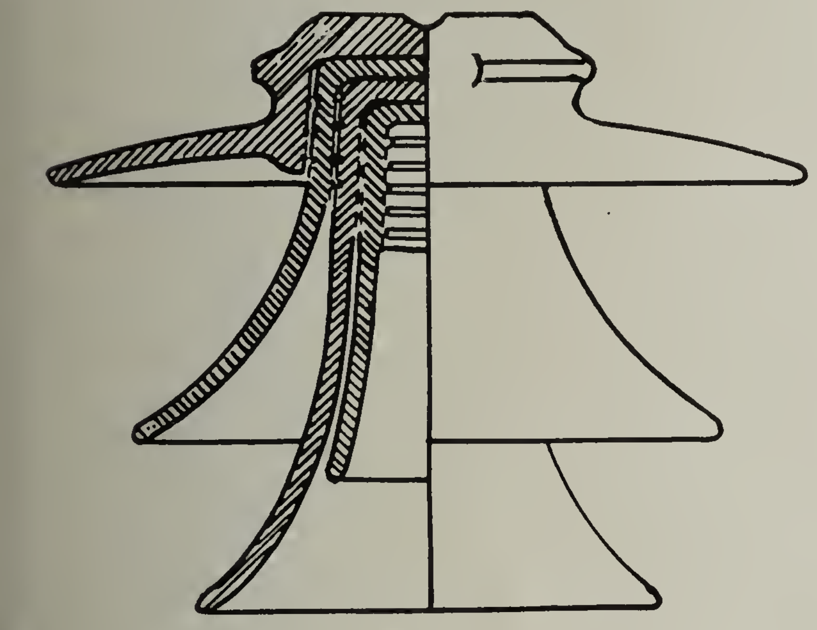


Fig. 3.

After being glazed the insulators are then subjected to the glost fire. During the biscuit fire the method of setting the insulators in the saggers is of little importance, but in the glost kiln it is very necessary to see that the pieces do not rest directly on one another, to prevent them sticking together. Since, in general, the bottom edge of the insulator is glazed, it becomes necessary to place the insulator on a fire clay support, thrust up into the pin hole, thereby keeping the insulators from resting on each other. For larger insulators, a so-called "burning surface" is provided for shortly beneath the pin hole and upon which the insulator can rest, using a ring or circular support.

During the glost fire the piece shrinks approximately 18-20 per cent, occasioning considerable difficulty where a close observance of dimensions is required.

For wall insulators another method of manufacture is used. All such insulators are provided with a smooth bore thruout their entire length, while the exterior is provided with ribs or some similar profiles to increase the surface insulation.

Such insulators are manufactured by two different methods: by turning on a lathe or by so-called freehand turning. For the first of these methods plaster of paris molds are required, being used in the same way as the method first described. While the material is still in the mold the opening thru the tube is made with some suitable tool. The mold does not give the insulator the desired outer shape, but rather is used to merely make a so-called "blank" of the piece required. After this blank has become leather-hard, it is removed from the mold and put in an ordinary lathe, when the desired profiles are then cut.

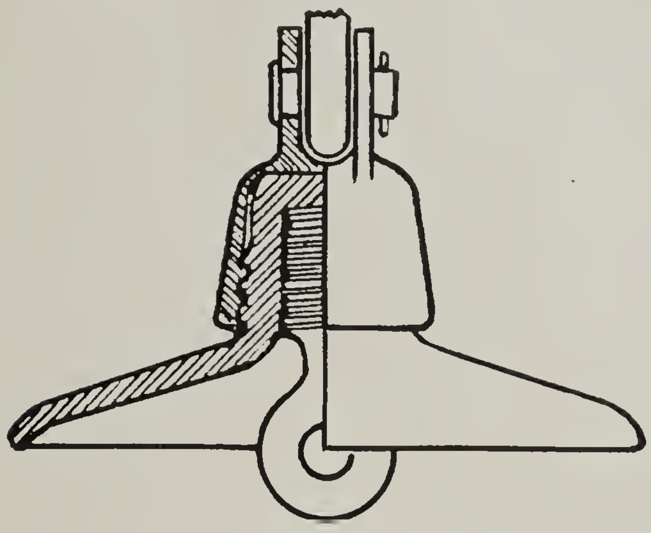


Fig. 4.

The free-hand turning differs from the method just described by the absence of all plaster molds. In this method the rough outer shape or the "blank" is made by "throwing" on a potters wheel, the shaping being done entirely with the hands. The piece is then removed from the wheel and when it has become leather-hard it is treated as above on a lathe, acquiring any desired profiles. Insulators of great length, 4 feet and more, can be made by either of these methods.

The Dry Press Method.

This method is next in importance after the jiggering method described first. The distinguishing feature is the use of steel molds in place of plaster of paris, steel being necessary because of the great pressure required, especially for complicated shapes. Most of the machines used are hand operated.

The material for this method is not in the plastic condition, as is required for jiggering, but rather is as a damp powder.

For the manufacture of a simple type of insulator a two-piece mold is used. The two pieces of the mold are closed and put into a suitable frame in the press. The required amount of material is then put into the mold and strongly pressed by a down-coming plunger which also holds a rod for making the pin hole. The product is taken out by pushing the mold up out of the frame by a foot lever and then merely opening it.

If it is required that the pin hole be threaded a full round tap is pressed into the material and is later removed by simply unscrewing it.

On account of the high price of steel molds the dry press method can only be used where there is a great demand for the resulting product.

The pieces are allowed to stand until dry and the fins, caused by the fissures of the mold, removed.

To avoid warpage of these pieces in burning, a support is made of the same material as the insulator, upon which the insultor rests and with which it shrinks equally, thereby avoiding distortion.

The Auger Machine Method.

Briefly, this method consists in filling a large cylinder with plastic material and forcing it out thru an opening in the bottom corresponding to the cross-section of the insulator in question. The inside diameter of the tube is given by a core held in the middle of the opening by 3 or 4 small supports. These supports, of course, produce corresponding cuts in the porcelain material, but these immediately close, due to the great pressure. Tubes as long as 6 or 7 feet can be made in this way.

The Pouring or Casting Method.

This method is of relatively small importance, only such shapes being made in this way as have irregular forms, like sockets, bent tubes, etc.

The glazing and burning of the products of the different methods is practically the same for all.

Testing the Insulators.

For low tension insulators an inspection to discover external flaws will suffice, but for the high tension insulators a rigid electrical test is necessary.

In testing they are connected with a high voltage transformer, thru which they are subjected to a voltage from two to three times as great as they are rated to carry when in use. For instance, an insulator to handle 50,000 volts is subjected to a voltage of 120-130,000. This latter value is about the limit that an individual insulator can carry safely.

In testing bare wire insulators the head of the insulator is immersed in water up to the depth of the threads, which serves as one electrode, while water poured into the pin hole acts as the other.

The amount of voltage with which an insulator can be tested depends naturally on the size and shape of the piece. In general they are tested up to their capacity, which is limited by the insulating strength of the air surrounding them. When the air no longer acts as an insulator the current short circuits and arcs across.

Insulators for high tension purposes are generally made of several pieces burned separately and as a rule tested separately. It is possible for a single insulator so made to carry as high as 70-80,000 volts.

But, on the other hand, insulators of this type are very heavy and also for different reasons their carrying capacity does not increase proportionately with their dimensions.

The highest working voltages of 80-110,000 volts have made necessary a new type of insulator, namely, the suspension type, shown in Fig. 4. In using these, several of the same design are suspended underneath each other by suitable hooks and the bottom insulator and the bottom unit attached to the conducting wire by a suitable clamp. By a proper arrangement of such insulators practically any voltage can be handled. For instance, in the State of Michigan a suspension insulator of 10 units carries 140,000 volts. The capacity of this insulator is 600,000 volts.

Of prime importance is the electrical strength of the units, inasmuch as that unit adjacent to the line wire may at times be subjected to its full flash over potential. Careful electrical tests prove that all other features of design of suspension insulators are secondary in importance to the matter of unit electrical strength. Mechanical methods of attaching the units together and of fastening the insulators to the supporting structure and conductor are of relatively small electrical importance.

When wet the electrical strength of an insulator is materially less. The insulator made up of ensheathed bell-shaped parts has been found to shed rain best and these are consequently more efficient.

Probably the least known property of a hard porcelain insulator is its great mechanical strength, principally compressive strength, rather than tensile.

It is practically impossible to bring an insulator to its rupture point, if properly made and supported by applying mechanical force in the manner in which the insulator will be obliged to carry a load when in actual line service, because the iron pin supporting it would shear off first.

This great mechanical strength, its durability under all weather conditions and its great electrical strength, all give hard porcelain first place in the ranks of insulating materials.

Casting of Whiteware Bodies

Generally speaking the casting of porcelain bodies presents no special difficulties, chiefly because they are not very plastic. The higher placticity of white ware mixtures, however, causes considerable trouble and care in the casting process.

Of course, the casting slip should contain as little water as possible and still maintain the desired fluidity. The use of sodium carbonate for thinning clay slips is well known and needs no further comment. Very often, however, a mixture containing a valuable and very plastic clay does not yield to the sodium carbonate treatment.

A German clay worker describes a case of this sort and gives his solution of the difficulty. The body worked very nicely when used in the jiggering process but was unsatisfactory for the casting method. The body was made less plastic by decreasing the plastic clay and increasing the leaning materials, such as the finely ground porcelain, but with all the different proportions negative results were obtained.

As is well known, other materials than sodium carbonate are used for thinning clay slip, as, for instance, water glass (sodium silicate). This latter material was then tried, using a saturated solution and immediately a decided thinning of the slip ensued. Upon standing over night, however, it was found that there was separation of the plastic and non-plastic constituents, showing that an addition of sodium carbonate was also necessary. A vigorous stirring seemed to intimately mix the separated materials, but the mixture would not acquire its initial fluidity.

Further investigation showed that the addition of 4½ lbs. sodium carbonate and 3 pts. of saturated water glass solution to 2,250 lbs. dry material and 145 gals. H_2O, produced a good casting slip satisfactory in all respects. Without the use of water glass, 172 gallons of water were required. It is at once apparent that the smaller amount of H_2O effected a great saving in molds.

A continued research using several very plastic clays, showed that none failed to produce a satisfactory casting slip, where water glass (sodium silicate) was used.

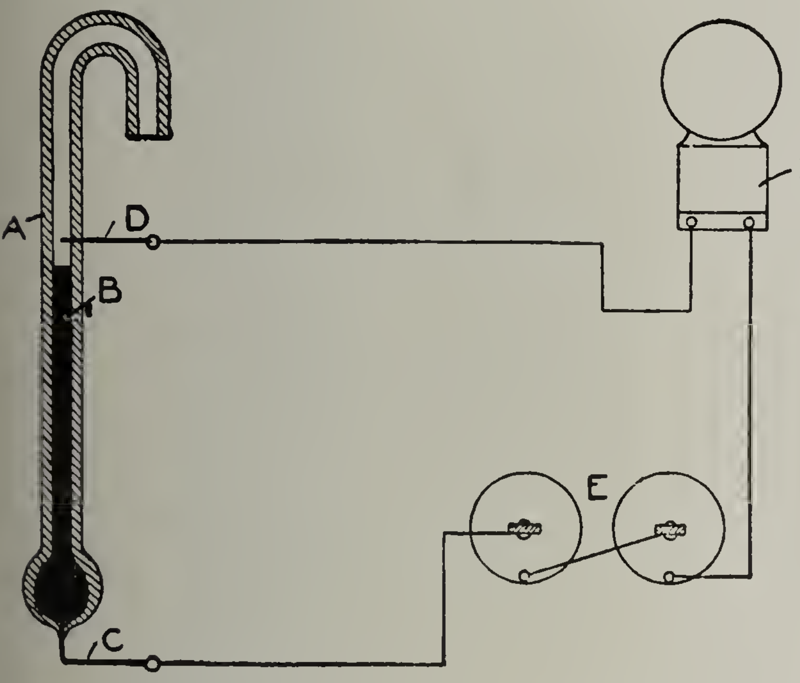
The Superintendent

A DEPARTMENT CONDUCTED FOR THE INTERCHANGE OF IDEAS IN METHODS OF MANUFACTURE

Contributions from our readers are solicited for this department on any subject pertaining to the manufacturing end of the industry. Short cuts and labor-saving suggestions are particularly sought. Address all communications to the Editor of the Superintendent Department. Brick and Clay Record, Chicago.

A simple alarm, that is very effective in giving an audible signal to an engineer or attendant in charge of machinery, when any of the bearings or other parts reach a temperature greater than some previously determined value for which the alarm is adjusted.

As described in "Popular Mechanics," the alarm consists of an ordinary vibrating bell and battery connected in series with a special switch. This special switch, consists of a small glass tube that has a bulb formed on one end and two pieces of platinum wire fastened in its wall. One of these pieces of wire is located at the lower end of the tube and the other a short distance from the lower or bulb end. Their ends extend a short distance inside the glass wall so that they can make electrical contact with a quantity of mercury that is placed in the tube. The quantity of mercury should be such that it barely makes electrical connection with the upper platinum wire when the temperature of the mercury corresponds to the temperature of the bearing at which the alarm is to be sounded. For all temperatures below the above value the two platinum wires will not be connected by the mercury, and since they are connected in series in the bell circuit, the circuit will be open. A diagrammatic arrangement of the circuit and tube containing the mercury is shown in the sketch, in which A represents the glass tube; B, the mercury; C and D, thep latinum wires; E, the battery, and F, the vibrating bell.



A number of tubes or switches may be connected in parallel and any one of them will cause the bell to ring. In such an arrangement it is necessary for the attendant to examine all the bearings whose switches are connected in parallel, in order to determine which has an excessive temperature, but this objection can be easily overcome by using an ordinary annunciator and assigning to each bearing, or group when a large number are equipped, a separate indicator, in which case inspection of all bearings is not necessary.

The inside diameter of the glass tube should be comparatively small and the bulb on the end relatively large, as this arrangement makes the switch much more sensative, because the column of mercury will then change more in height for any given change in temperature. The upper end of the tube can be bent over and its end turned down, which will prevent, to a certain extent, foreign matter accumulating on top of the mercury. These tubes should all be mounted as near the bearing, or part of the machine they are to guard, as possible. They may be easily mounted mechanically, but they will not perform properly unless they are influenced in the right way by the temperature they are to govern. A small wad of asbestos wool may be placed over the bulb when it is in contact with the outer surface of the bearing which will prevent undue radiation and cause the temperature of the mercury to correspond very nearly to that of the bearing.

Short pieces of platinum wire that will serve the purpose can be obtained from the base of an old incandescent lamp. Platinum is used because it does not corrode and it expands and contracts the same amount as glass with a change in temperature, which gives a perfect seal between the glass and platinum at all times.

The spirit of co-operation is in the air. Large industries combine, smaller industries "associate," owners form employers' leagues and men "unions." It is the modern evolution of the community spirit, that made tribes and clans in the sparsely settled world, where, in the cave-dweller days, each man's hand—and stone hammer—were against every other man within his horizon. Unions, leagues, associations and combinations are good in principle, since they use the combined strength of small units to the general good of the many. They are the reverse of good, in the relative proportion that this strength is used to coerce some one into doing something that is, or seems to be, unprofitable.

In every large business organization there is a tendency for employes to indulge in petty jealousies and gossip affecting their fellow-workers. It is not confined to the machine room, the factory or the mine—it extends to the office and to the departments where "wages" are called "salaries." The result is inevitably that of decreased efficiency, for, not being able to hurt the man who is the target for the jealousy or gossip, they "take it out" of the employer, who, if even a small part of the gossip be correct, is already being injured by the continued employment of the man who is being discussed.

The fraternal spirit of any organization does much to offset the insidious poison of adverse criticism; where no organization exists, much can be done by the superintendent, if he will call his men together at stated periods, and encourages the open discussion of "wrongs," real or fancied, and of preferments that the unfortunates consider unjust. A "strike," with a frank avowal of its cause, is less to be feared than a cancer-like feeling of dissatisfaction, that eats its way into the profits as surely and secretly as a moth-grub in your last winter's coat.

Common Brick

A bitterly contested struggle for the supremacy of the brick market of New York City will take place in the near future, when the New York Connecting Railroad, now in course of construction, is opened to traffic. The Hudson river and Raritan river interests will then find that they have, in the Connecticut producers, worthy competitors for the bulk of New York city's trade, so far as common brick are concerned.

In the Borough of Queens, that part of Greater New York which lies beyond the old city of Brooklyn, the records for building construction is and has been, all year, beating all previous records for the same section—and this in the face of the fact that reports from practically all other parts of the country are showing a sharp decline. From Jan. 1 to July 31, 1913, nearly three thousand building plans were filed, as compared with 2,843 in the same period of 1912. And where the value of new building construction has steadily and consistently shrunk in all other boroughs, the value reported for the first half of this year was $10,594,969, as compared with $10,587,718 in the first six months of 1912. The alterations for the same period this year were less than 84 per cent of the amount filed in the same period last year, thus showing that the bulk of the building work in the big borough of Queens is rather in the nature of new building construction, than in repairs to old buildings.

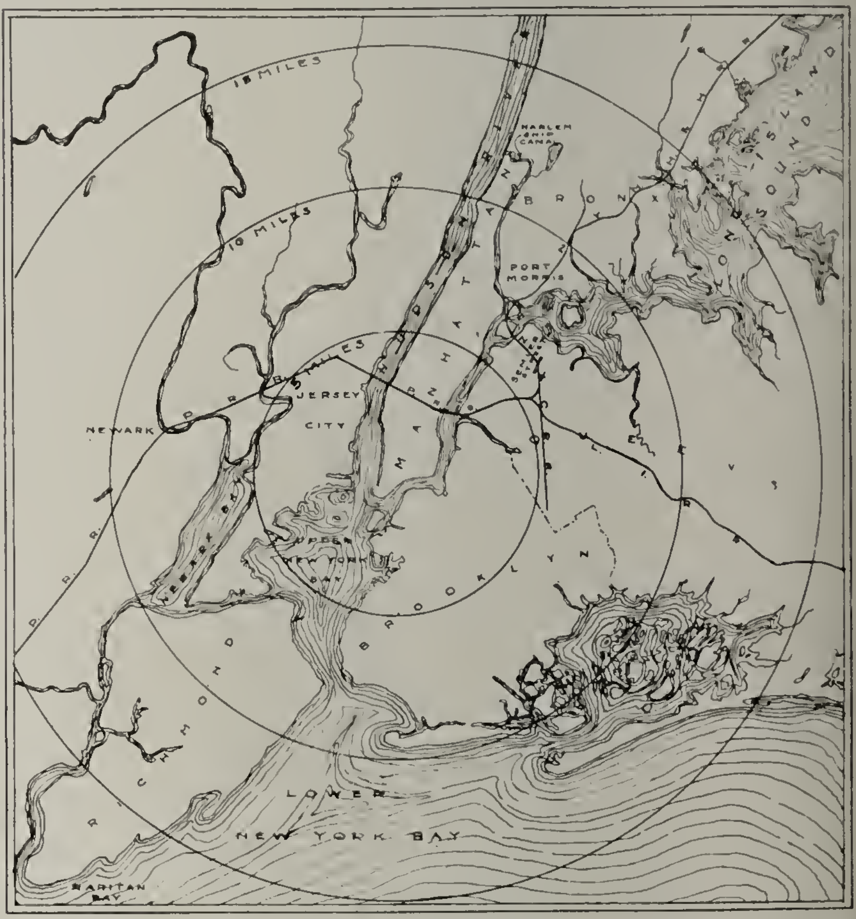
In other words, even the depression in the money market has seemingly had no effect upon building to the east of the East river, a fact that has not escaped the business-hungry Connecticut brickmaker, who has cast covetous eyes on New York for many years. The fact that he has not been able to ship his brick into New York's great material-consuming field, unless the market top was at least $7.00, has caused him great mental agony, for his own locality, if the truth be told, has not encouraged its local manufacturers by "building booms" or public improvements. New England, in a building sense, grows very gradually.

And even with "commons" at $7.00 in New York, the Connecticut man was handicapped by the geographical "lay of the land." He could not transship from train to barge or barge to train (the latter, in the event of his being lucky enough to have tidewater at his yard) and compete with the Hudson river men who could ship by boat all the way, or with the Raritan river men who had the same advantage. And besides, he had the Long Island brickmaker to meet.

But the New York Connecting Railroad puts a new field before him. It enables him to load his brick on cars at his yard and ship without change (and hardly without car transfer) direct to any part of Long Island by means of the bridge that will connect Long Island with the mainland of Bronx Borough. Incidentally, it puts rail transportation right to the door of the Hudson river brick manufacturers who are on the east bank of the river and also the Raritan river brick manufacturers by reason of the Pennsylvania Railhoad Company's joint ownership in the Connecting Railroad. The Raritan river plants are somewhat remote from the Pennsylvania railroad main line, but the Raritan river railroad taps practically every brick plant along the South and Raritan rivers and the Raritan river railroad is a subsidiary of the Pennsylvania system. Hence the three big brickmaking districts of the New York market are plunged into competition in supplying this rich borough with building brick.

As an example of what Queens Borough thinks of the importance of the new railroad, the Topographical Bureau of that borough has completed a diagram showing just where and how the new railroad will join Bronx Borough with Long Island. Most of the land that the railroad will tap is held by the Stuyvesant Realty Company, a holding corporation for the Pennsylvania Railroad Company. It is the intention of the Stuyvesant company to develop this entire tract for factory purposes, and means that for every factory building erected a hundred or more residential buildings must be erected to house labor to operate the mills. Merging as it will, the Pennsylvania with its western connections, the Long Island with its spurs running to every nook and corner of Long Island and the New York, New Haven & Hartford with its vast connections through Connecticut and its interchanging agreements with the New York Central, there are peculiar advantages offered to factory owners in locating their mills along this connecting road, especially since the factories themselves will be within at least a 10c fare distance from the heart of New York city.

That is the cause. Here is the probable effect as far as the Eastern brick makers are concerned:



Brick now comes to market from the North and Raritan river plants by means of barges carrying from 350,000 to 500,000 brick each. They are brought to the wholesale docks and when sold, are towed around to purchasers' or public docks to be unloaded. Connecticut brick comes in almost exclusively by rail and at present can be profitably carried only as far as the Bronx. From the transfer yards of the New York, New Haven and Hartford railroad in the Bronx to Semler street, Queens, is not more than five miles. It is therefore plain that the increased cost of hauling these carloads of brick to Queens entirely lets down the bars that have made this rich field inaccessible to the Connecticut brickmaker.

But the North river producers do not intend to let this market get away from them.

There are two alternatives offered to the North river brick manufacturer. He can ship by rail direct via the New York Central, Connecting Railroad and Long Island Railroad direct to Queens, or he can establish a barge basin along the shores of the Long Island Sound via the Harlem ship canal to the East river, and ride his brick to the Stuyvesant developments. Another, a possible third plan, would be for him to load cars on floats at his sheds and tow them to the Long Island railroad large slips and thence haul the cars to the distributing center.

Architectural Terra Cotta

The building illustrated above is the Commercial Bank, of Raleigh, N. C., for which P. T. Marye, of Atlanta, Ga., was architect. The John T. Wilson Company, of Richmond, Va., was general contractor, and all of the trim above the second-story belt course, with the exception of the brick spandrels, is of dark gray terra cotta, furnished by the Atlanta Terra Cotta Company, through courtesy of whom the photograph was obtained.

POLYCHROME TERRA COTTA GAINS FAVOR.

The demand for architectural terra cotta in San Francisco and vicinity is on the increase, and activity in hotel and apartment house construction in preparation for the Exposition in 1915 is expected to bring out a still stronger demand. It is noted that polychrome work is used to a much larger extent than a few years ago, local firms having proven their ability to turn out such work in fine shape.

Coast Gossip.

N. Clark & Sons, of San Francisco, Cal., have recently taken the terra cotta contract for the large Pittock block at Portland, Ore.

Plans will soon be completed for the Science Museum in Golden Gate Park, San Francisco, to be a Class A structure with terra cotta facing, costing about $120,000.

The News in Brief

It is reported that the American Stone Co., of Floyd Knobs, Ind., will erect a brick and tile plant at Mexia, Texas.

The James Kennedy Construction Company has the contract to install a complete sewer system for the town of Linnton, Ore.

The city engineer of Huntington Beach, Cal., has completed plans for a new sewer system, including a septic tank, the estimated cost of which is $29,000.

The Chamber of Commerce of Lambertville, N. J., is negotiating with parties interested in starting a pottery at that place.

Sheds, warehouses, dryhouse, engine and boiler houses at the Gethman Brick Company's plant in Reinbeck, Iowa, were destroyed by fire early in August.

G. W. Conklin, of Vandervoort, Ark., has bought the Huston Brick Plant and will remodel it, expecting to be in a position to turn out brick in the spring.

A number of improvements are being made to the Acme Press Brick Company's plant at Denton, Tex. A steam shovel is being installed and other extensions made that will increase the capacity from 35,000 to 55,000 a day.

The Clark Pressed Brick Company, of Malvern, Ark., is completing the construction of a Raymond producer-gas fired, continuous kiln, and made a trial burning a few days since. The company is making improvements that

John Paul, of Massillon, Ohio, has given an option on his clayland, to certain Cleveland and Massillon interests, and it is expected that a new brick plant will be started in Coxey's home town in the near future.

The Zimbal Brick Co., of Sheboygan, Wis., started in business a quarter of a century ago, with a single brick kiln. Today it is one of the best known yards in the vicinity of Sheboygan, and has a capacity of 50,000 commons a day. It also manufactures a special line of drain tile.

The Decoto, Cal., brick plant, which has been closed for some time, is again in operation, turning out pressed brick. The plant has undergone extensive alterations and is now considered one of the best equipped brick manufacturing establishments around San Francisco Bay.

The Kansas B ff Brick & Manufacturing Co., of Neodesha, Kas., has decided to use colored labor at its plant, instead of the white labor previously employed. The scarcity of white labor and its unwillingness to work with negroes, makes it an uncertain quantity.

The American Encaustic Tile Co. has bought a ten-acre site at Perth Amboy, N. J., for $150,000 and will erect an additional plant. The purchase of the tract was consummated a few days ago, and plans for the improvements will be completed at an early date.

It is rumored that a briquetting machine will be installed at the Hebron (N. D.) Brick & Tile Company's plant, to utilize lignite in briquette form, for fuel. Both the gas that is generated in making the briquettes and the briquettes themselves, it is said, will be used in different stages of brick and tile manufacture.

The Ione Fire Brick Company's plant at Ione, Cal., A. S. Cunningham, superintendent, is now turning out about 20,000 fire brick daily, making up a stock to meet the winter demand. About half a million have already been piled up, and sheds are being built to cover the entire yards, as it is desired to increase the scale of winter operations.

Frederick H. MacDonald, of Grand Rapids, Mich., is receiving the major portion of the face brick orders in that city and the surrounding towns. Among the contracts recently taken by him are a bank building at Freeport, Mich., a factory at St. Johns, Mich., a residence at Hastings, Mich., and two residences in Grand Rapids—one for Mrs. Sumandyke and the other for G. L. Doty.

The McArthur Junction Coal & Brick Company has just been granted a charter at Columbus, Ohio, with a capital stock of $100,000. The incorporators are K. B. Stevenson, W. B. Ferris, J. H. Gilliland, G. M. Long and R. E. Kelley, of Columbus. The company will do a general coal mining business and will manufacture brick, having recently secured lands in the vicinity of Junction City, O.

Sand-Lime Brick

THE SAND LIME BRICK ASSOCIATION.

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Vice-president, F. B. Allan, Toronto, Ont.
Secretary, W. E. Plummer, Jr., Buffalo N. Y.
Treasurer, John L. Jackson, Saginaw, Mich.

Executive Committee.

G. Silvester, Calgary, Alta.; E. G. Chapman, Minneapolis, Minn.; E. M. Burchfield, Rochester, N. Y.; H. H. Tifft, Tifton, Ga.; L. W. Penfield, Willoughby, Ohio.

More than 600,000 sand-lime brick, manufactured by the Hummelstown Brown Stone Company, were used in the schoolhouse at Rahway, N. J., an illustration of which is given in this issue. These bricks were all "run of plant," the builder selecting the more perfect brick for facing purposes. The brick were sold at $10,00 per M., f. o. b. cars, Rahway. In a letter written to the secretary of the Sand-Lime Brick Association, by Allen K. Walton, president of the Hummelstown Brown Stone Company, he states that up to the 1st of July, 1913, his company had shipped about 4,000,000 sand-lime brick and had orders on the books for another 3,000,000. Among the more important shipments were 500,000 for a public school building at Coatesville, Pa., where the brick were used for facing and backing up; 650,000 for a school at Mt. Carmel, Pa.; 900,000 for backing up, in a school at Hershey, Pa.; 450,000 for facing and backing, in a public school at Palmerton, Pa., 400,000 for facing and backing, in a warehouse at Pottsville, Pa.; 700,000 for the Slovak Union buildings at Highspire, Pa. He states that they are shipping the run of the plant, the cull percentage being nominal.

School at Rahway, N. J. Exterior and Backing Up Brick Furnished by Hummelstown Brown Stone Company.

From Dayton, Ohio, comes the good news that the Crune Brick Company, is furnishing orders that aggregate over 3,500,000 sand-lime brick, the largest being the Stivers Manual Training School, which will take 1,500,000. Mr. Crune says that his principal difficulty is securing men to work steadily and so permit his plant to get out capacity, a matter of prime necessity, since he is sold up to the hilt for the season.

Writing from Minneapolis, Minn., the Belt Line Brick Company says that the demand for brick of all kinds in Minneapolis and St. Paul this season has been very good, and that it has had its full share of the business. In fact, the demand during June was more than it could supply, and it was obliged to refuse a number of orders.

Among other jobs that the Belt Line Brick Company has supplied recently are the Webster Mfg. Co., 625,000; Mazda Lamp Co. Bldg., a branch of Nat'l Lamp Co., 1,250,000; Progressive Shoe Machine Co., 350,000; Mattison Transfer Co., 350,000; Union Brass & Metal Co., 200,000; Garrot Candy Co., 150,000, besides numerous store and flat buildings taking from 25,000 to 150,000 each.

Sewer Pipe

The National Sewer Pipe Company, of Webster City, Iowa, manufacturers of sewer pipe, drain tile, wall coping, conduits and flue linings, has recently completed its equipment of twelve kilns, each 32 ft. inside diameter. Each kiln holds from 70 to 75 tons of burned product, or from five to five and one-half cars. It uses but one press, which was purchased from the Taplin-Rice-Clerkin Company; this press has a 22 in. clay cylinder and 44 in. steam cylinder. It is planned to install a larger press this winter.

The plant is run by steam, with a few electric motor drives for the elevators and conveyors. The entire transmission is Dodge type, manila rope drive. The engine is a 20 by 42 Murray-Corliss and two 250 h.p. Murray tubular boilers are used to generate the steam. For grinding, a No. 48 American Ring Pulverizer is installed and is giving satisfaction. The wet pans were manufactured by the Eagle Iron Works, of Des Moines.

The factory is situated on a 35-acre site, with splendid switching facilities. The clay is hauled from Lehigh, 16 miles down the river, in railroad dump cars.

C. H. Clifton is president of the National Sewer Pipe Company, H. R. Dodge, vice-president; P. W. Hearn, secretary and general manager; B. F. Paine, treasurer, and G. E. Lowrie, factory superintendent.

The city of Globe, Ariz., has plans for a sewer system under consideration, the estimated cost being $149,000.

An election will be held at Stockton, Cal., in September, to vote on an issue of $600,000 bonds for sewer extension.

Under the competent management of Fred Owesney, of Steubenville, O., the business of the East Ohio Sewer Pipe Co., at Irondale, O., is increasing rapidly. In fact, the company has found it necessary to increase its production, and with this end in view the capacity will be about doubled. A tin mill that was formely located at Irondale and which suspended operations some years ago, has been in the market for some time. This site has been obtained, and the East Ohio company is erecting a new plant thereon. Construction work is progressing under most favorable circumstances.

As a result of extensive experiments, and the discovery of a clay at Wanlock, Ill., the Three M's clay working plant at Monmouth, Ill., is now in a position to overcome all past difficulties in the manufacture of sewer-pipe, a product that they can produce in large quantities. For some time past, the company has had trouble with the pipes' proving faulty in burning, the glaze peeling and other minor defects appearing in the course of manufacture. By mixing the Wanlock clay with that obtained at Colchester, the ware is made tougher and the glaze is easily retained. Nineteen kilns are under fire and from five to seven cars are being shipped daily.

The cities of Pasadena, South Pasadena, Alhambra and other towns of the San Gabriel Valley district have about decided on the construction of a large outfall sewer and disposal system to serve all the towns in that district. The plan at present is to install a reduction plant at Whittier Narrows, and use the surplus water for irrigation.

Face Brick

Exception has been taken to the stand maintained by "Brick & Clay Record" in a recent issue ,wherein we made certain adverse criticisms to "buying-at-home" leagues, particularly when coupled with the report that the plant mentioned in the article was "shipping its product widely throughout the country." No permanent business success is promised upon anything but equal goods at equal—or better—prices, and questions of sentiment, while they may have some effect upon individual contracts, do not, in the long run, secure the success of any enterprise. A home market is desirable, and necessary; if, however, some plant in a neighboring—or even fairly distant—town can undersell you, value for value, in your home town, how much better equipped it is to undersell you in outlying markets!

And if it can undersell you in your own home town, or even meet your price, something is either wrong with your plant, or with the plant competing. Your ultimate business salvation lies in the latter,. for the "something wrong" is that your competitor is selling at, or near cost. You know what that means in the long run and *you know it is better to let him have the business, even though it be at your gates,* than to try and meet his price, and so adopt his suicidal policy of low margins, without injuring anyone but yourself. *When he gets a contract at cost, he loses money, but when you take the work at his price, and sell too close to your own cost, he loses nothing.*

At the same time, to go before the school board in your own home town, or before the building committee on any public work in your town, or to your friends who may be building, with no better plea than your being a fellow-townsman, and asking them to give you a better price than that at which they can buy material, equally as good, from some one that operates ten, twenty or a hundred miles away, is "playing the baby act" and is a poor commentary on your ability to make as cheaply and as well as your competitor.

All things being equal, you ought to get the business. You ship to distant cities and meet the competition of other plants, without any thought of pleading for any consideration, other than that which the, excellence of your product earns; in your home town, you have an advantage, in that you have no freight to pay, while your competitor has to pay a certain amount over his cost, to cover transportation. If he meets your figure, there is something wrong.

Is it that you have been asking your fellow-townsmen a higher yard price than you ask on the same brick, packed for shipment to some other place? If so, and your competitor sees a chance of getting his regular price, plus freight, and still undersell you, he is entitled to his day in court, and to his chances of getting the business. No fine courtesy exists in these matters—if you would not sell your brick in the town in which a competitor operates a plant, provided you could do so at a fair profit, you are foolish and you condemn that town to buy his brick, whether it will or no. That is the "buying-at-home" principle and it is radically wrong.

But just as you would not consider going into his town and selling at cost or at a loss, in order to take the business away from him (except, mayhap, in retaliation for what you consider his piracy of your town's work), he should be similarly sensible in regard to the handicap he sells against, in trying to undersell you on your own door-step. If he does not see it—go to him and reason with him. The arguments you make to him will be business arguments, based on sound common sense—not the sophistry of "home industries" and "helping pay the taxes" that are all too frequently excuses for attempts to make your friends pay a little more for your brick than you ordinarily charge in the open market.

It is said, however, that a plant must have some high market to offset the many cases in which it has to accept a low price, or be "shut out." Plant managers are prone to strike averages, getting the highest possible figure where competition is not strong and taking what they can, when struggling for a foothold in some market where freight or some other condition is against them. This condition is one that is hard to remedy,·yet a little thoughtful consideration would show that, if every plant were doing the same thing, the low

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prices made by plants that "absorbed part of the freight" keep those plants that enjoy a more favorable position (from the freight standpoint) from quoting prices that would bring in a goodly profit. Your "piracy," therefore, in some distant market, may be the reason for the "piracy" of your competitor, in coming into your town with a price that you are certain cannot pay him a living profit on his material. By "meeting competition" (some of which is misrepresented to you and some of which is legitimate) you give your competitor the same opinion about you, that you have about him—namely, that there is "no bottom to your price"—and while it may seem to be good business to you to "keep him guessing"—it is a policy that puts face-brick plants in receiver's hands.

The plant that cannot sell all of the brick it makes, and sell each order at a fair margin, in a good year, or even in a fairly good year, is going to have hard sledding in a poor year—and they cannot all be "good." The "good average price" that needs a lot of local work at more than ordinary profit to offset the amount of orders that are taken at less than a fair margin, is a pitfall that threatens the very life of the industry. If the local trade falls off, or if it begins to be shared by one or more competitors, the "average" is dependent upon a vast outlying market, a great part of which has been made "poor" by your demanding your share of its business at prices which, taken by themselves, were too low to be profitable.

Better not try to "sell capacity" unless every order shows a fair profit—otherwise you will find your overhead increasing—increasing through the added interest you will have to pay, on the fast accumulating indebtedness that awaits you at the bank where you discount your notes.

A quarterly meeting of the Ohio Face Brick Manufacturers' Association was held at the Chittenden Hotel, Columbus, Ohio, August 27, following a luncheon that was served at one o'clock. The meeting had been called by President W. D. Richardson for the purpose of conferring with dealers in face brick, very much along the lines of the meeting held some months since, when the American Face Brick Association and the Face Brick Dealers' Association held committee conferences.

The Ohio Face Brick Manufacturers' Association, being more local in its scope, is trying to get closer to Ohio dealers and those who depend largely upon Ohio plants for the greater part of their supply. As a consequence, the major portion of the informal discussions that marked the meeting, were on the relative positions of the manufacturer and dealer.

The question of manufacturers "selling direct," by opening an office in some city other than that in which the factory is located, or, by combining with other manufacturers, starting a sort of co-operative selling office, such as has been established in Cleveland, Ohio, by the Belden Brick Company and the Beaver Clay Manufacturing Company, together with the new owners of the Ohio Mining & Manufacturing Company, of Shawnee, Ohio, was brought up by the dealers represented, and a statement made that this was unfair to the Face Brick Dealers' Association. No action was taken in the matter, however, as it was a little too heavy for the state organization.

Some of the face brick manufacturers seemed to feel that Governor Cox's recommendation that convicts of the Ohio penitentiary and the Ohio reformatory be set to work, making paving brick, would be detrimental to the brick industry of the state. This despite the fact that the National Paving Brick Manufacturers' Association had expressed an entirely different opinion. It is evident that the Ohio face brick men fear that the "convict labor" idea in brickmaking might not stop at paving brick.

Notwithstanding the resumption of operations at its Santa Monica plant, all departments of the Los Angeles Pressed Brick Company are still rushed. The southern plants have found it hard to keep up with their deliveries, and John Gerlach, superintendent of the plant at Richmond, says the large run of new business from San Francisco and near-by towns keeps the outfit there going at full capacity.

McCreery Brothers have purchased the Lanius Pressed Brick plant at Abilene, Tex., and are overhauling the equipment, expecting to turn one or more kilns the latter part of this month.

Paving Brick

While it is true that there are two sides to every question, it is also self evident that one side is nearer correct than the other. The whole country is awakening to the need of good roads—plans are being made for an ocean-to-ocean highway—state legislatures are appropriating millions and the U. S. government hundreds of millions, to further the construction, repair and maintenance of permanent highways.

Yet the following letter, received by the "Evening Telegram" of Adrian, Mich., is an illuminating specimen of stand-pat silurianism. Their correspondent says:

> "Editor Telegram—I have read these articles of yours for some time about the roads, and I want to say I am for mud roads first and last. I can remember when my parents and their parents were alive, and what was good enough for them is good enough for me. It's hard work to make our money and we want to keep it. Also then it makes me sick to see these city chaps and your smart ellicks tearing around in their automobiles as though they owned the earth, the men with their hats off and the women with their heads all tied up for style. My farm is bought and paid for and by hard work. Are their fancy automobiles paid for, with extra tires and their clutches—you answer that. You city men are always trying to get the best of it, buying low and selling high and the automobilist is the worst. Give me the old mud scow and I can get to town, I don't care what the weather is. For my part I hope there will be no improvements this year nor the next nor the next after that, and I can tell you we will get about just as well as ever when the weather is bad while your high priced sillinders and roadsters are where they ought to be—under the sheds. The price of all this fixing up the roads is not the point. We don't need it. Let nature take her course. Mud roads help to keep the children at home. When they are a little sticky they can't drive so well and when the roads dry up it is time to begin the spring chores. My son George got that 40 horse power sillinder in his head not long ago, and that and the hired girl idea kept his mind pretty busy, but I put my foot down. Where would we be in the winter with hard roads and the boys running around the country all the time? If we had less bridges over every little creek and more fords they would not get along so fast with their 40 horse power sillinders. Yours truly.—Mud Roads.

Defying the march of progress he stands, the exponent of all that has made farm labor and farm isolation so distasteful that it has alienated a whole generation of farmers' sons and daughters.

ROAD BUILDING FUNDS WASTED.

Department of Agriculture Points Need of Building Permanent Road and Folly of Neglect.

The office of Public Roads of the Department of Agriculture is making a strong effort to focus the mind of the country on the fact that maintenance and effective repair are of equal importance with the actual improvement of bad roads. Investment of money in new roads does not become real economy until provision is made for keeping these new roads in condition after they are built. If a new road was built and then allowed to fall into disrepair, much of the original investment is simply wasted.

Europe, generally speaking, is ahead of the United States in the matter of road improvement, but Great Britain is struggling with a problem similar to the one that confronts

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OLEAN BLOCK
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None Are Better

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the people of the United States. In England, Scotland and Wales there are no fewer than 2,140 separate authorities who between them, administer 175,487 miles of roads, or an average of only 82 miles apiece. In Scotland, apart from the big cities, there are over 200 burghs, one-half of which have but 10 miles of road apiece to maintain. Needless to say, such a minute mileage is insufficient to keep the road plant fully occupied all the year around, and renders the employment of a skilled engineer impossible for economical reasons.

Officials of the Office of Public Roads when called upon for assistance by the various states are pointing out that road building is an art based on a science, and that trained men and experienced men are necessary to secure the best results from the expenditure of road funds.

Statisticians have found that although the average expenditure on the improvement of roads exceeds one million dollars a day, a large portion of the money in the United States is wasted because of the failure to build the right type of road to meet the local requirements or the failure to provide for the continued maintenance of the improvement.

The various states and counties within the past six months have taken a greater interest in road improvement than ever before in the history of the United States, and there is now a strong movement to conserve the roads of the country where they are improved. Scientific maintenance will be one of the chief features of the work of the Office of Public Roads throughout the present year.

While New York city has been a comparatively closed market to paving brick for many years, the state, outside of New York city, is opening up as a rich field for this product. Twelve important highways, making air-line connections between important villages and cities are contemplated, and, according to John N. Carlisle, commissioner of highways, ten of the twelve will be of vitrified brick or block.

The time has come when the plaint of the automobilist should be heeded in the matter of good roads, and, since many of the men who hold public office are owners of high-power cars, they are beginning to listen to their own troubles—tire troubles, mostly. The man who owns a car pays two ways for the roadway over which he runs—in his automobile tax and in his tire upkeep. By making the tax effective in securing good roads, he will reduce his cost of tire upkeep—hence the "good roads" movement has powerful and vitally interested friends.

To the man who owns a car, a brickpaved road is the essence of all virtues; the first cost is a serious factor, but it has been demonstrated that the brick road stands up under the heavy automobile traffic better than any other class of road, and that it costs comparatively little for maintenance, as compared to the cost of oil, scraping and frost repairs, that are inevitable with other types.

The average tourist hates oil, and if it is possible to lay tinted brick that will remove the glare of the roadway from the eyes of the driver, the acme of road perfection is reached in the mind of the man behind the goggles.

This man is a power in the Empire state today and through him brick paved highways are not only probabilities—they are assured.

The brick has just arrived in San Francisco for paving First street between Market and Mission, and the work is attracting considerable attention, as this will be the first brick pavement in San Francisco to stand regular heavy teaming. The old pavement has been removed and the concrete foundation is now being laid.

Pottery

Notwithstanding the fact that the general pottery business of the country at the present time is "marking time," there seems to be a desire upon the art of some to rush into the erection of new plants. The latest pottery plant to be talked over is one to be built at Morgantown, W. Va., but the names of the backers of the scheme have not been publically announced. So far the matter is resting with the Board of Trade of Morgantown, although the Morgantown Brick Company is taking an active interest in the proposition, and has made known its purpose of assisting, in a financial way, the erection of the plant. One story that has come out of the West Virginia town says: "East Liverpool men are coming to Morgantown to erect a new pottery on account of the state being 'dry.'" The new pottery company, or the backers of the project announce that they are willing to put $80,000 into the deal, all of their own money. They ask a free site, a loan of $30,000 through the Guaranty Association of the Board of Trade and a bonus of $15,000. The company announces its intent to employ 250 people and have a pay roll averaging $5,000 every two weeks.

There is no denying the fact that laws passed by the last Ohio Legislature have not worked to the benefit of the Ohio pottery trade, and it may be for this reason that some interested in the business may feel inclined to move their plants elsewhere, where the laws are more favorable to the manufacturer.

Announcement has just been made that the capital stock of the Saxon China Company, of Sebring, Ohio, of which Fred Sebring is president and general manager, has been reduced from $350,000 to $160,000. The firm was the last to erect a pottery in Sebring, and it has a capacity of about nine kilns. The firm has been doing an excellent business since it started operations, but like all other Ohio pottery manufacturers, has been handicapped on account of the shortage of pottery labor.

The Thomas China Company, of Lisbon, Ohio, manufacturers of electric porcelain insulators, and identified with the R. Thomas & Sons Electric Porcelain Company, of East Liverpool, Ohio, has commenced to increase its plant. A new storage house will be built and a large cooperage erected. Increased business has caused the company to make these improvements.

Some western sanitary pottery manufacturers declare this year that general orders have not been up to the high mark reached last year this time, which would indicate that building operations are not as extensive. The New Castle Sanitary Pottery Company, however, is enjoying a heavy business, and because of this fact has started to double the capacity of its works. The sanitary plants in the vicinity of Wheeling, W. Va., appear to be working full time, but some of the workers there have left their benches to take positions in the East Liverpool district.

Samuel Frost, formerly from Trenton, N. J., and for a number of years engaged in the modeling business in East Liverpool, Ohio, and more recently a part owner in the McNicol-Corns Pottery Company, of Wellsville, Ohio, has retired from the firm, and will go into the real estate business. His stock was bought by the sons of D. E. McNicol, of the D. E. McNicol Pottery Company, of East Liverpool, Ohio. The Wellsville plant is under the management of Albert Corns.

The Hall China Company, of East Liverpool, Ohio, is getting out of the domestic pottery business and hereafter will feature hard fired semi-vitreous porcelain specialties, lines that are not now manufactured by any other pottery concern in the country. All lines will be new, and will possess such exclusive features that the company will enjoy a distinct business.

Operations at the East Liverpool, Ohio, plant of the Anderson Electric Porcelain Company, which is controlled by the General Electric Porcelain Company, have been suspended and the employes are seeking labor elsewhere. The company has started the erection of a large plant at Parkersburg, W. Va., which will give employment to over 300 people and will cost over $400,000 to

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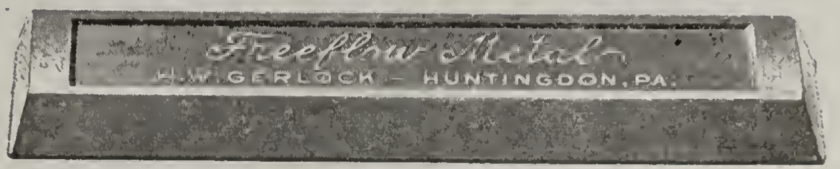

The Name
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itself implies something—but its use proves **more**. It is remarkably durable and its initially good qualities last throughout, until it is worn down to the thinness of paper.
It is anti-friction, has practically no shrinkage and is a glutton for heavy pressure and high speed.
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build. This factory is expected to have a capacity of between 1,200 and 1,800 carloads annually. This will average more than four carloads of electric porcelain goods daily.

Members of the National Brotherhood of Operative Potters throughout the country are to be asked to take a referendum vote on a question that has never before come before the organization. It refers to the granting of an extension to the date of the joint conference with the manufacturers' committee, the latter having announced that they will not be in a position to go into any conference until after the Senate has rendered its final decision on the tariff schedules. In past years the joint conference wherein wage agreements have been discussed has always been held either in August or early September.

Officials of the Brotherhood at East Liverpool, Ohio, met a committee of the manufacturers several weeks ago and were advised of the inability of the manufacturers to go into conference at this time, as the tariff had not been settled, and there is a clause in the agreement which makes many of the provisions contingent upon the tariff laws. Brotherhood officials were unable to adjust the question and announced that the proposition would be referred to a vote of the membership. It will be several weeks before the result of the vote is announced.

Underglaze gold, the secret of which potters all over the world have, for centuries, endeavored to master, has at last become a possibility. In the Etruria plant of the Cook Pottery Company, of Trenton, N. J., they are now drawing kiln after kiln of china embellished with underglaze gold, says the Trenton (N. J.) "Advertiser". The experimental stage, covering a period of seven years, has been passed, and china is being shipped to all parts of the country—china that has a gold decoration that is guaranteed to be as durable as the ware itself. The experiments were conducted by Charles Howell Cook, and their successful termination means a revolution in the manufacture of hotel china.

The Owen China Company, of Minerva, Ohio, appears to be a financial success, for its board of directors has just announced the authorization of another dividend of two-and-a-half per cent—the second dividend to be paid during 1913.

Besides operating the old Brunt pottery at East Liverpool, Ohio, the six kiln addition to the Taylor, Smith & Taylor Pottery Company, at Chester, West Va., is well under way. When completed, this firm will have fourteen kilns in operation, beside those on the Brunt plant.

One hundred and ninety cars of pottery left the sidings of the Ransbottom Brothers works in Zanesville, Ohio, during the month of August. This is an average of seven carloads per working day.

Twenty-five small brick houses are being erected at Newell, W. Va., three miles south of Chester, by the North American Manufacturing Company.

Pottery manufacturers of Sebring, Ohio, are experimenting with the making of sanitary ware and this may shift some of the present New Jersey supremacy to the Middle West

STONEWARE MADE IN ALBERTA.

Medicine Hat, the Place Where They "Make the Weather," Has Only Pottery in Western Canada.

During the past three months, a pottery has been started in Medicine Hat, Alta., the place that some wag said was the point at which the weather man manufactured the blizzards. The fact that Medicine Hat is the "farthes North and West" in the meteoroligical survey of this continent, has a tendency to give it credit (?) for all unusua barometrical disturbances.

Aside from the weather, however, it is a matter o record that this is the first pottery to be started in Western Canada and with natural gas in abundance, the enterprise should be a huge success. The company will mak stoneware specialties and has a well trained corps of potters at work, under the direction of officials who hav made pottery both in the "States" and in England.

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of every description. This Heraeus Patented Fused Quartz Glass is not affected by any changes of temperature whatsoever, and the co-efficient of expansion is only 1-17 that of platinum. It is of the utmost importance for all purposes where the above qualities are essential. Write for information. Pamphlets and References on Application.
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Fire Brick and Refractories

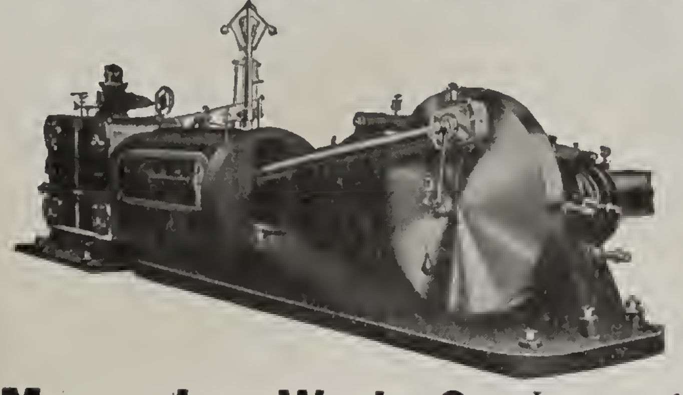
At a recent meeting of the Refractories Manufacturers' Association, the vacancies that existed in the list of officers and in the executive committee were, with one exception, filled. The roster now is: President, H. D. Savage, (Ashland Fire Brick Company, Ashland, Ky.); vice-president, J. E. Lewis, (Harbison-Walker Refractories Company, Pittsburgh, Pa.); secretary and treasurer, John H. Cavender, (American Refractories Company, Chicago, Ill.); executive committee, J. L. Green, (Laclede-Christy Clay Products Company, St. Louis, Mo.); C. S. Reed, (Chicago Retort & Fire Brick Company, Chicago, Ill.); D. D. Davis, (Davis Fire Brick Company, Oak Hill, Ohio); T. E. Thomas, (Niles Fire Brick Company, Niles, Ohio); J. H. McFeely, (McFeely Brick Company, Pittsburgh, Pa.); George H. Diack, (Queens Run Fire Brick Company, Lock Haven, Pa.); C. H. Claiborne, (Union Mining Company, Mt. Savage, Md.); Cyrus Borgner, (Cyrus Borgner Company, Philadelphia, Pa.) One vacancy exists in the executive committee—that of Kentucky, no member having been elected to serve as from that state. A constitution has been adopted, providing for election to membership in the association of any individual, firm or corporation engaged in the manufacture of refractories. Applicants for membership are passed upon by the executive committee, who will determine whether the character of the business of such applicant actually corresponds to that of members actually manufacturing refractories. The objects of the association, as stated in the constitution, are "to promote closer relations between the manufacturer, dealer and consumer of refractories of all kinds; to improve in every way the product of its members; to standardize, as far as possible, the various designs and shapes manufactured; to endeavor to secure to the best of its ability equitable freight rates for manufacturer and consumer alike, and especially to promote general good fellowship among its members."

The constitution further provides that the officers, executive committee, or any standing or special committee, or the association itself, in regular or special meeting assembled, shall not enter into any agreement, contract, arrangement or understanding with any association or organization of any kind, which will, in any way, obligate members of the Refractories Manufacturers Association to the payment of any fine, penalty, commission or any other expense, or which will require them to observe rules, regulations, restrictions, practices or methods of any kind whatsoever.

The government of the association is vested in an executive committee of eleven members, this number including the president, or vice-president and the treasurer. The balance of the committee is to be made up, if possible, of members of the association in nine districts, one representative of each district being elected to serve until his successor, operating in the same district, shall have been elected. For the purpose of providing for the election of new members to the committee, the first executive committee consists of three members elected for three years, three elected for two years and three for one year. The districts are Missouri, Illinois, Kentucky, Southern Ohio, Northern Ohio, Western Pennsylvania and West Virginia, Central Pennsylvania, Maryland, New Jersey and New England.

The Standard Refractories Company, which was formed by Thomas N. Kurtz, of Huntingdon, Pa., will erect a modern silica brick plant at Claysburg, Pa. Plans for the new plant are being prepared by Charles A. Searing, of Pittsburgh. Mr. Kurtz was for several years connected with the management of the Mount Union (Pa.) Silica Brick Company, and has been in the brick business for more than fifteen years. The directors of the new company are: Oliver H. Hewitt, William T. Sheaffer, W. Lovell Baldrige, Peter S. Duncan, W. M. Henderson, William and Frank O'Connor, Dr. J. G. Spangler and James McGrain. It is proposed to have the plant completed for operation early in the new year. The buildings will be of fireproof construction and the latest models of machinery will be installed

POWER PLANTS COMPLETE
CORLISS ENGINES, WATER-TUBE AND TUBULAR BOILERS



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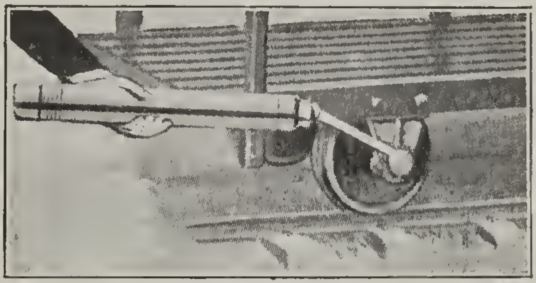

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Drain Tile

A suggestion comes from Louis Peridor, superintendent of the Fairmont (Minn.) Drain Tile & Brick Company, which may be of some value to readers of "Brick and Clay Record." He says that when he took charge of the work in Fairmont, they had had considerable trouble, through the clay's cracking in the dryer. He first took the bats and broken brick that lay around the kilns, and crushing them added the dust to the clay. That did not work well, however, as it made the ware soft. He then tried cinders, putting in half and half—that is, half cinders and half ground brick-bats. This stopped the cracking in the dryer, made the ware stronger and saved 20 per cent of the fuel consumption in the burning.

Whereas the plant had been losing, Mr. Peridor says, the adoption of this simple method of using a by-product, put it on a paying basis within two months after the plan was adopted, not to mention the fact that the yard is kept clean, without the expense of hauling away the refuse to the dump, or to spread upon some bottomless road.

A. W. Wentz, of the National Brick & Tile Company, has written to secretary Tyler, of the Hutchinson (Kas.) Commercial Club, stating that his company has decided to go to Hutchinson if it be given a desirable location of not less than three acres, upon the river bank. He states that the company has chosen Hutchinson in preference to other cities that have offered greater inducements than those asked by the company, and that it has no water or stock to sell, being a fully paid up corporation, capitalized at $50,000. Wichita and Arkansas City papers have both announced that the National Brick & Tile Company intended locating in Wichita or Arkansas City, but it would appear that these announcements were premature.

Owing to the increased demand for farm drain tile, the Monmouth (Ore.) Brick & Tile Company has decided that its present equipment is too small to produce the output necessary to supply the wants of that section of the country. It has, therefore, closed down its works and is making extensive alterations that, when completed, will more than double its former capacity.

Henry Stricker, of 1025 East Twenty-fifth St., Erie, Pa., manufacturer of tiles and chimney caps, has announced that the capacity of the works is to be increased. Additional machinery is to be installed.

The Roodhouse Clay Products Company, 140 S. Dearborn St., Chicago, Ill., will build either a building brick or a drain tile plant at its clay property in Greene County, Illinois.

A new sewer pipe and drain tile plant is in course of construction at Anniston, Ala., Frank W. McWane and M. H. Maury, both of Anniston, are interested.

Recent Incorporations.

The Bush Clay Products Company, Bush, Anapra, New Mex. Grant A. Bush, El Paso, Tex., Kent G. Bush, Anapra, N. M., Wm. W. Littlejohn, El Paso, Tex. Capital stock, $100,000.

Western Brick & Tile Company, Oklahoma City, Okla. Capital, $200,000. J. A. Milbanks, Norman, Okla., W. H. Cogshall, Oklahoma City, and J. W. Phillips, Washington, Okla.

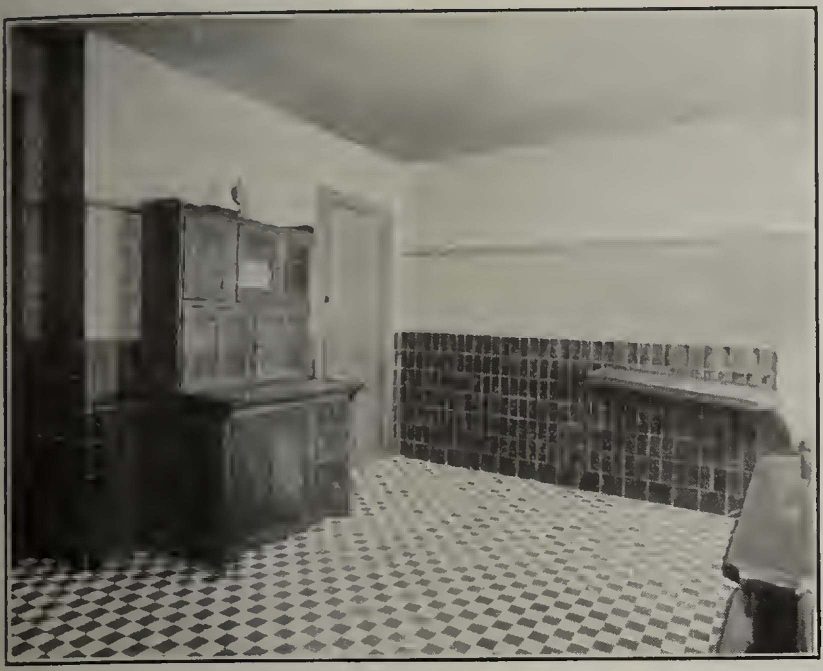
Peoria Brick & Tile Company, Peoria, Ill. Capital stock, $2,000. F. R. Carter, Harry E. Man and George T. Page, all of Peoria.

The D. C. Hager Brick & Tile plant at Coal City, Ill., have started the foundation for a 40x80 ft. addition to their machine shop.

The Marshalltown (Iowa) Sewer Pipe & Tile Co. is building two new kilns and will probably start two additional kilns in the fall.

Tyrone Brick & Tile Company, Tyrone, Pa. Capital, $40,000. John W. Gardner, William Jacob, George H. and Leonard L. Fuoss.

Floor and Wall Tile



The illustration in this issue of the tile work in the kitchen of the residence of Mr. John C. Hills, Trenton, N. J., shows glazed wall and unglazed floor tiles both applied in color, the darker portion of wall being in an ivy green, while the upper part is a light cucumber, with cap and liners in yellow tan.

The floor is laid with three-inch vitreous, unglazed squares in green and white, set just as the kilns produced them, no effort whatever being made to conceal the joints between the pieces. Five or six different sizes were also used, which made irregular lines and joints of various widths. Natural color gray cement was used for the grouting, this being considered better than white, which only becomes discolored in time; it is contended that if gray be used originally, the joints are already dark, and will remain so permanently.

The time has arrived in this country for tiles to be set artistically and it is not supposed a wall or floor composed of them should look like linoleum, plastic composition flooring, cheap wall paper, or any other imitative material. The old-fashioned idea that tiles should be precisely the same shade when set, is rapidly disappearing.

A modern school of decoration discards the notion of dead uniformity of color in favor of natural variation, as in wood, marble and brickwork. It has also advocated the recognition of construction lines as essential to good design.

The brick wall is no longer laid with hair joints, the mortar being colored to match the brick, but the inevitable joints are frankly recognized as a necessary part of the structure, and therefore an essential in the the scheme of color. The same should be true of tile, as it is not pretended that the whole floor or wall is one piece of clay. The idea is that of construction and the work should honestly show how it is put together. In setting the tiles in Mr. Hills' kitchen the above method was strictly adhered to, as several different shades were used, first alternately, then at random.

This is the age of fireproof construction, and as all clay products are thoroughly fireproof, sanitary and everlasting, it is quite certain that, in the very near future, the application of tiles to the kitchen will rapidly develop, even in moderately priced homes. There is at present a growing demand for the use of colored tiles, and in a great many of our finest residences they are being applied exclusively to both walls and floors in the bathrooms, no white being used whatever.

The tiles for Mr. Hills' residence were made by the Trent Tile Company, of Trenton, N. J.

There was some political controversy over the substitution by the contractor on the Hill Street tunnel in Los Angeles of white glazed tile for glazed brick, as specified. The trouble seems to have quieted down, however, and the tile with which the tunnel is lined gives it a good light throughout its length. This is said to be the first tunnel of any size in the United States to be lined throughout with white glazed tile.

The Rust Clay Feeder

Is a machine with a purpose. It is used not only for **efficiency** but for decided **economy**—saving you upwards of $500.00 a year in your clay plant. While it saves you real money it also permits a more uniform mixture of your material and therefore improves your product.

You may dispense with "something else" but not with The Rust Clay Feeder—it's **indispensable.** Shall we send you more evidence?

Marion Machine, Foundry & Supply Company
Box 395 MARION, IND.

5/8 Yard Revolving Shovel in Clay Pit, Woodland, Ill.

THE LABOR QUESTION

is a very serious one with you, if your men go on strike—if they are continually laying off; if they leave you at the most critical moment. The key to the situation seems to be the use of labor-saving devices.

The little **Marion Revolving Shovel** shown above may solve your excavating problems. Why not write us today for information.

We build steam shovels in all sizes from the smallest to the largest.

The Marion Steam Shovel Co.
Station A Marion, Ohio

Big GANDY Belts On Difficult Drives!

The two little pictures down at the bottom of this ad show a few of the Gandy Belts operating on difficult drives in the plant of the Oklahoma Portland Cement Company, Ada, Oklahoma.

The Gandy Belt

is made of an extra heavy close woven cotton duck, stitched with a heavy twine saturated in a compound of purest oils, making it steam, heat, water and dust proof. 34 years' success proves the Gandy will stand up under hard service in the brick field. One-third the cost of leather belting — very much less than that of rubber belting.

Write today for samples and full information.

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THE COAST LINE TO MACKINAC
DETROIT,
CLEVELAND, BUFFALO,
NIAGARA FALLS,
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Spend your vacation on the Great Lakes, the most economical and enjoyable outing in America.

Daily service is operated between Detroit and Cleveland, Detroit and Buffalo; four trips weekly between Toledo, Detroit, Mackinac Island and way ports; daily service between Toledo, Cleveland and Put-in-Bay.

A Cleveland to Mackinac special steamer will be operated two trips weekly from June 15th to September 10th, stopping only at Detroit every trip and Goderich, Ont., every Monday up-bound, Saturday down-bound.—Special Day Trips Between Detroit and Cleveland, During July and August.—Railroad Tickets Available on Steamers.

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D&C LAKE LINES

Machines and Equipment

A patent which has just been granted the Automatic Tile Machine Company on a machine for sizing and warping tile, which may be of interest to readers of "Brick & Clay Record." It obviates the necessity of measuring the shrinkage in tile, and determines whether the tile has become warped or crooked in burning. It eliminates the human equation so far as the determination of perfect outline and uniformity of size is concerned. At no time during the operation is the judgment of the operator called upon; the tile, regardless of size, are fed into the machine by a boy or girl, who need have no previous experience, and are removed from the other end of the machine by another operator. During the progress through the machine, each tile is measured by an ingenious combination of electrical and mechanical appliances and a character indicating the variation is printed automatically on the back of the tile. At another point in the machine, the tiles are tested for warpage by mechanical fingers, and so delicate is their operation that they record variations from a true plane by one-thousandths of an inch. Characters indicating the different degrees of warpage are also automatically printed on the back of each tile. When the question of perfect or imperfect tile is left to a machine of this character, there is no doubt as to the outcome; the management, rather than the workmen, judges what is and what is not sufficiently perfect to be acceptable on certain work. With this machine "kicks" on size and warping will rest where they belong and upon shoulders sufficiently broad to bear the burden.

Daniel W. Cummins, formerly with the Chisholm, Boyd & White Company, died in Australia July 2, 1913. He was a native of California, was about 55 years of age, and became identified with the brick industry in 1887, in Denver, Colo. In 1889 he entered the employ of the Chisholm, Boyd & White Company as erecting engineer, traveling from coast to coast, erecting Boyd brick presses and other machinery. He also spent two years in Germany, representing the same concern. In 1904 he entered the employ of the H. Huennekes Company, as consulting engineer on sand-lime brick plants and was with them about two years. Early in 1907 he re-entered the employ of the Chisholm, Boyd & White Company and erected two sand-lime brick plants for them, in New Zealand, making a trip around the world the next year. In 1910 he went to Australia to superintend the construction of two large sand-lime brick factories there, and when this work was completed, it was his intention to go around the world again, but on account of his health he was unable to do so.

Daniel W. Cummins was a Mason, hailing from Cleveland Lodge, No. 211, Illinois. He was considered one of the best clayworking and sand-lime brick machinery men in the country, having had more than 25 years' experience in the combined lines. His loss is keenly felt by those who were fortunate enough to come under the spell of his genial personality.

The Bonnot Company, of Canton, Ohio, has issued an attractive little folder, mainly about an order it had recently received from a customer who had been running an outfit making 50,000 brick a day, since 1900. Having decided to put in a new cutter and make some other improvements, he just naturally gave Bonnot the order without being urged. The folder bears the slogan "Good Machinery and Fair Dealing is the Foundation upon which we have Built Our Business" and is a very effective piece of trade literature.

The Falls Brick & Tile Company has installed a "New Wonder" intermediate brick and tile machine which doubles the former capacity of the plant at Sheboygan Falls, Wis. The output is principally four, five and six inch tile.

A petition in bankruptcy has been filed by the Black Hawk Manufacturing Company, of Sears, Rock Island Co., Ill., a concern engaged in the manufacture of brick and other clay products. In its schedule, the liabilities are placed at $156,506 and the assets at $146,813, the latter consisting of real estate to an estimated value of $85,000, stock at $27,787 and machinery and equipment at $15,330.

Freight Tariffs

In the series of articles which "Brick & Clay Record" has been publishing in connection with overcharges, misrouting, etc., simple remedies have been proposed, which will, to a measure, obviate some of the chances of manufacturers of clay products paying out more than is legally required for the transportation of their materials. A time comes, however, when seemingly exorbitant rates are, seemingly, invulnerable, and recourse must be taken to the Interstate Commerce Commission, which, while it acts in the light of an umpire, in disputes arising over tariffs and classifications, ruling with impartiality sometimes for and sometimes against the shippers, is empowered to enforce remedies, when the charges are really exorbitant, and when the railroad is clearly at fault.

What you should do, in case this condition ever arises at your plant, is clearly set forth in the paragraphs that follow; particular stress is laid on the fact too much dependence should not be placed on organization action, such as might be attempted by one of the various associations of clayworkers that are now studying the problem of the "equalization of freight rates." In case you are the aggrieved party, and you feel you have a just grievance, it is up to you to fight your own battle. The question is how to fight it with the best chance of success and the least possible loss, which, in the event of a decision being rendered adverse to your contention, would be a total loss to you.

Read carefully what follows:

Since 1887 the Interstate Commerce Commission has been gathering statistics relating to the physical, financial, transportation and traffic factors of the railways of the United States. Statistics of this character gathered by the Commission, now in their files at Washington, are official.

Heretofore the rule of the Commission was that any pertinent data in their files at Washington was considered as being in a case without being produced in the particular proceeding.

The Supreme Court of the United States in the case of Interstate Commerce Commission vs. Louisville & Nashville Railroad Company decided January 20, 1913, (227 U. S. 88) held:

> "Where the party affected is entitled to a hearing, the Interstate Commerce Commission cannot base an order establishing a rate on the information which it has gathered for general purposes under the provisions of Section 12 of act. The order must be based on evidence produced in the particular proceeding."

Under this recent decision of the Supreme Court, it is very important hereafter in presenting cases before the Interstate Commerce Commission, that complainants introduce at the hearing all the factors upon which they rely to make out their case.

From the foregoing it will be seen that parties contemplating action before the Commission should in the first place secure the services of thoroughly competent counsel, especially those familiar with the practices, proceedings, and rulings of the Commission and decisions of the Commerce and Supreme Courts.

A case properly prepared means much to the complainant, while one improperly prepared is equivalent to no case at all.

It is a matter of record that a large number of cases fall, on account of counsel burdening the records with irrelevant data and factors which the Commission has long since discarded as incompetent. A word to the wise is sufficient.

It may be well to remember that in the case of Commercial Club of Omaha, Docket No. 3056 for reparation, that a complaint filed by an association on behalf of certain of its members who are named, and a finding that complainant's members are entitled to reparation, does not include members of the association other than those named in the complaint.

The act provides that "all complaints for the recovery of damages shall be filed within two years from the time the cause of action accrues." The commission therefore says:

"Under the general rules of pleading and more

The "Martin"
BRICK MACHINERY

Modern
YARD SUPPLIES

Soft-Mud or Stiff-Mud Processes
Get Our Plans
Dry or Wet Grinding Pans
Barrows and Trucks
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Clay Cars--Dryer Cars
Hoisting Drums

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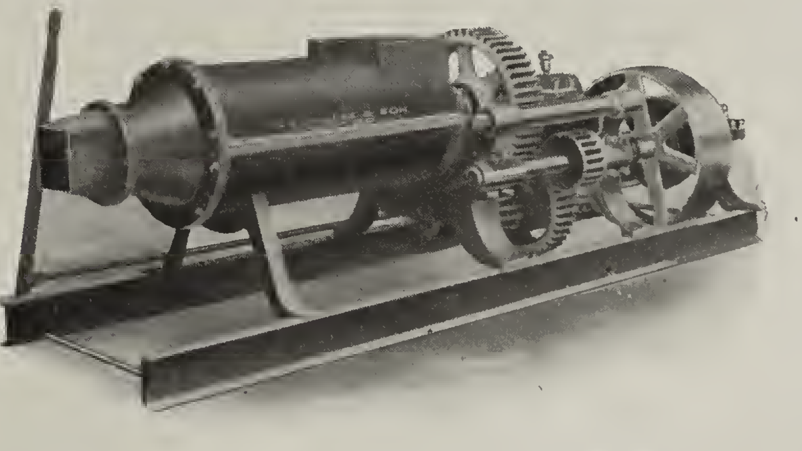
We make a specialty of designing and furnishing complete machinery equipment for all kinds of clay-working plants, including expert engineering service in supervising erection and installation.



Double Pug Mill equipment, especially designed for the perfect preparation of material in the manufacture of terra cotta.

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suitable for all purposes. If you are having clutch trouble, write to us and we will show you the way out of your difficulties.

Complete brick plants furnished promptly, including auger machines, pug mills, clay cars and granulator shafts.

Cutting and cut steel gears always in stock for brick machines, also granulator knives.

Remember, we are brick works engineers and will be glad to advise you regarding any improvements or repairs which you contemplate.

A. L. SCHULTZ & SON, 1675 Elston Ave., Chicago
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Have increased the production of many brick and clay plants 10 per cent or more. Our engineers know just the motor characteristics required to drive each type of machine in brick plants at its best producing speed. Our knowledge gained in equipping numerous plants is yours, and costs you nothing. Write to our nearest office for full information.

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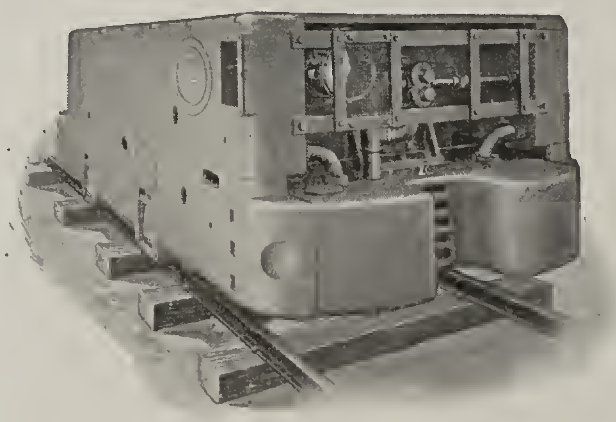

Over 300 in Use—

Used by 150 Companies.
Used for Underground
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2½ to 16 Tons Weight.

Geo. D. Whitcomb Co.
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clearly under the special language of this act, (section 13) we therefore hold that no complaint by a voluntary association which fails to name the actual parties in interest on whose behalf reparation is demanded * * * can be said, under the amended act, to state a cause of action. And the filing of such a complaint cannot stop the period of limitation provided in the act, since no cause of action, formal or informal, is alleged."

In this particular case there were three complainants who were not named in the exhibit attached to the original complainant's petition and no claim was ever filed by or for therein with the Commission. The Commission therefore held that they could not consider the statements of shipments sent to the delivering carriers as in any way attaching their jurisdiction. There being no complaints, no orders of dismissal were necessary.

Since our last issue, the following changes in rates on various clay products have been made, and are now in effect:

From Eastern Points.

From Auburn, Brownstone and Hamburg, Pa., Brick, to Norfolk, Va., 13c per cwt.

From Bethlehem, Pa., Old brick, to Williamstown, N. J., 9c per cwt.

From Brownstone and Guth, Pa., Brick, to Andover, N. J., 8¾c per cwt.; to Greycourt, N. Y., 9c per cwt.

From Guth, Pa., Brick, to Edgewater, N. J., 9¾c per cwt.

From North Oxford Mills, Mass., Common brick, to Brattleboro, Vt., 6c per cwt.; to New London, Norwich, Stafford and Willimantic, Conn., 6½c per cwt.

From Oaks, Pa., Brick, to Norfolk and Portsmouth, Va., 12¼c per cwt.

From Orviston, Pa., Fire Brick and fire clay to Jamestown, N. Y., 12c per cwt.

From Philadelphia, Pa., and Port Reading, N. J., Brick, to Richmond, Va., 13c per cwt.

From Port Reading and Woodbridge, N. J., Brick, to Franklin Junction and McAfee, N. J., 8c per cwt.; to Warwick, N. Y., 9c per cwt.

From Reading, Pa., to Portsmouth, Va., 12c per cwt.

From Spring Garden Junction, Pa., Brick, building, chimney, common, face, fire, front, hollow, lime, paving, pressed, roofing, salt-glazed (when shipped same as pressed brick, individual brick not being packed), fire-proofing (made of clay, plaster, gypsum rock or cement), flat flooring tile, building and hollow tile slabs, to Ocean City, N. J., 11¾c per cwt.; to Trenton, N. J., 7½c per cwt.

From Middle West Points.

From Decatur, Ind., Brick, to Schumm, Ohio, 2½c per cwt.

From Berlin, Buckhorn, Burris, Campbell, Cincinnati, Gallia, Hoadley, Ironton, Limestone, McGhees, Olive, Peniel, Plummers, Remple, Ridgeland, Rocky Hill and Wellston, Ohio, Brick and clay, to Sudbury, Ont., 23¼c per net ton.

From Fort Dodge and Gypsum, Iowa, Brick and hollow building blocks, to St. Paul, Minneapolis and Minnesota Transfer, Minn., 7c per cwt.

From Western Points.

From Altoona, Brickton, Neodesha, Kas., and other Kansas points, Brick (except fire, bath and enameled), to Durant and Ury, Okla., 10c per cwt.

From Caney, Chanute, Coffeyville, Fredonia and Independence, Kas., Brick, to Cuba, Kas., 9½c per cwt.

From Cleveland and Helmick, Okla., Brick (except fire, bath and enameled), to Kansas City, Mo., 6c per cwt.

From Coffeyville and Independence, Kas., Brick (except bath and enameled), including fire clay and hollow building tile, to Norton, Kas., 15½c per cwt.

From Fredonia, Kas., Enameled brick, to Beatrice, Neb., Council Bluffs, Iowa, Lincoln, Nebraska City, Omaha and South Omaha, Neb., 15½c per cwt.

From Muskogee, Okla., Brick (except fire, bath and enameled), to Kansas City, Mo., 7c per net ton.

From Sioux Falls, S. D., and Sioux City, Iowa, Brick and articles taking same rates, to Albany, Hopkins, Minnneapolis, Minnesota Transfer, St. Cloud and St. Paul, Minn., 8c per cwt.

From Southern Points.

From Blackburn and Van Wyck, S. C., Common brick, to Waxhaw, N. C., $1.00 per M. brick.

Trade Review

New York.

With the case of the People vs. the Greater New York Brick Company in the hands of the September Grand Jury and common brick at the lowest level that has been reached in almost ten years, the lot of the Hudson river brickmaker is far from being a happy one. Facing personal, criminal indictment on account of an alleged violation of the Donnelly law, which prohibits combinations in restraint of trade, and hoping for the "best"—that "best" being that the case will be changed so that the company, not its individual directors, will be tried—his "best" is none too good. For if the case be so changed, it will mean the dissolution of the Greater New York Brick Company, and the placing of the Hudson river brickmaker at the mercy of the Building Material Exchange of New York—an enterprise that has for its object anything but the keeping up of prices.

Meanwhile common brick in the entire East reached the lowest summer level in almost a decade, when $6.00 was touched just prior to Labor Day, in New York city and the Newark yard prices went to $7.25 per M., with $7.75 ruling for special selects. The normal price is $8.25 for September run of kilns and $8.75 for selected Hudsons, at the opening of the average fall building season.

Still, the situation is not without its bright features. Ever since Thursday, August 26, there has been a better demand for Hudson brick at the wholesale docks. On that date sixteen bargeloads were sold, a volume that had not been equaled since April 24th, when the same number of bargeloads were sold. Normal summer sales for good North river brick average twelve a day. This year the average daily sale has been seven. The average number of Raritan barges selling per day in New York is three, representing a total annual consumption of Raritan brick in this market (inclusive of Newark) of 327,600,000 common brick, of which the Sayre & Fisher Company supplies about half. This year the average has been about 2.4 barge loads a day, showing where part of the brick consumption has gone in an off year. Raritan brick in New York is bringing a shade less than $6 per M. on the low range and $6.37½ on the high range.

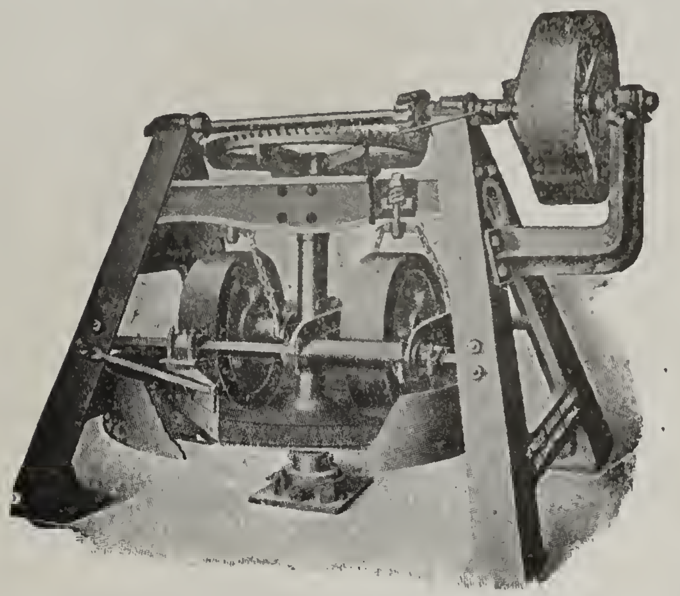
The biggest brick prize that has come forward in this part of the country since the local Pennsylvania railroad station was erected, is that offered by Thompson-Starrett Company, general contractors for the new 31 story, block-square Equitable building which probably will be the largest building in the world—for a while, at least. It will take 35,000 tons of steel and on this basis, about 11,550,000 common brick and 45,000 barrels of Portland cement. It is probable that a supplemental order for an extra million brick will be placed and it is expected that the contractors will make a reservation in the contract for an extra quantity at the same price at which they will purchase the original volume.

A great deal of interest has been aroused here regarding what the lowest ultimately accepted bid will be. Powerful factors are at work tending to bring the price way down. For instance: the market is sick and both Hudson and Raritan river plants have had a short season and have operated hardly more than half their capacity. They probably will close down a month and a half earlier than usual.

The market is being manipulated by reason of the litigation arising over the status of the leading distributing company here. Some hold that this will give the Jersey interests an advantage, but the Hudson river interests aver that they have the best to offer in the way of making assured deliveries during the cold season. If the order is placed through a dealer his cost of riding will be very low because the building stands less than a quarter of a mile from navigable water on three sides. Figuring on that basis the price may go below $6 per thousand for a high grade, hard burned building brick. Deliveries will run for probably seven months, part of which will be in winter during which navigation on the Hudson river will be closed and possibly the Raritan will be closed for days at a time, as was the case in the winter of 1911-12.

Another reason why far sighted brick manufacturers here in the East are inclined to await developments with more or less equanimity is that by the time the 1914

The "Eagle" Dry Pan



With independent and suspended mullers, has more

Distinctive Points of Merit

than any other Pan on the market.

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Chase Improved Flexible Bearing Folding Deck Dryer Car

See this car before placing your order.

We also manufacture a full line of Side Dump, Bottom Dump and General Purpose Cars, Transfer Cars, Turntables, Switches, etc.

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Don't Use Grates
They Waste Your Fuel

GRATELESS FURNACE Co

Conserve and control your fuel and save 15% to 25%. That's what the Grateless Gravity Feed Fire Box does for those who install it. Read what an Iowa clayworker has to say about it:

Audubon, Iowa, June 17, 1913.

Grateless Furnace Company,
Des Moines, Iowa.

Gentlemen:

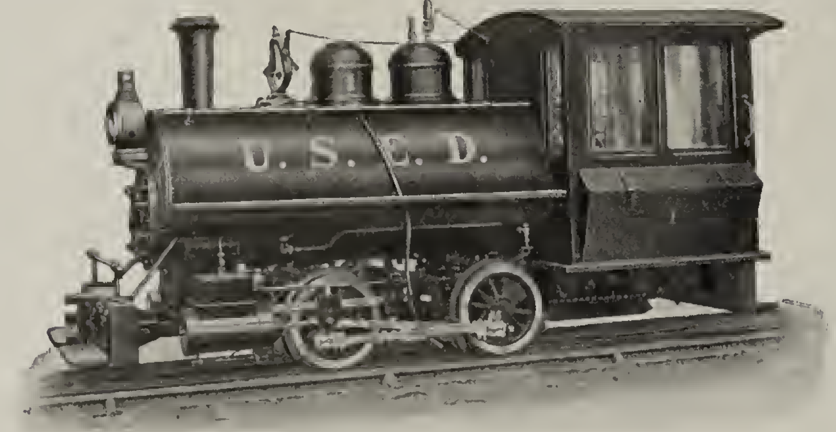
We have been using your Grateless Furnace for several years and find that we use about one-third less coal by this method over the old way of firing on flat grates. The length of time in burning is shortened from 12 to 16 hours, and we get a more uniform product throughout the kiln. We have installed the Grateless Furnaces in all of our Round Down Draft Kilns and highly recommend them for this type of kiln.

Yours truly,
L. E. TRAMP & TRAMP,
By B. Tramp.

We have a handsomely printed booklet that tells all about fuel consumption and the Grateless Furnace. Your copy waits your order.

GRATELESS FURNACE CO.
P. O. Box 685 DES MOINES, IOWA

CLAY HAULAGE
Reduce costs of transportation by using a
Davenport Industrial Locomotive



Small Size—Reasonable Cost—Especially built for use of clay products manufacturers, for hauling clay or shale from pits or mines to plant.

Cheaper Than Horse Transportation

and will reduce costs of delivering your material to your plant, thus increasing profits.

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Pittsburgh: 405 Oliver Bldg.
Montreal: 286 St. James St.
Winnipeg: 45 Canadian Life Block
Vancouver: 175 Cordova St.

brick making season opens there will have passed three renting seasons in New York and vicinity, namely: the spring and fall seasons of 1913 and the spring season of 1914. Brick manufacturers say that if there is any reason in fact for the contention of money lending interests of New York that New York has been over-built, almost a year of renting activity coupled with a restriction of one-third the normal volume of new construction during that period certainly ought to put the demand for new buildings in closer relation to supply. With a restricted supply for the season manufacturers figure that a complete readjustment of the brick market will be about due when the next year's brick making season starts.

Kentucky.

The Made-in-Louisville Exposition, held August 25-30, furnished the big news of the past month for the brick manufacturers of Louisville. The exposition, which was unique in character, attracted wide interest, and was held in the windows of the retail stores in the central part of the city, the merchants giving the space gratis for the purpose of boosting home products. As there were no restrictions, such as that the product shown must suggest the line of the merchant, it was easy to arrange the goods, and the people of Louisville were treated to an impressive demonstration of the wide variety of manufactured articles turned out by local manufacturing plants. The clay products field was well covered, and all of the members of the trade who showed their goods did themselves proud. The Louisville Brick Company showed in the windows of the Louisville branch of the National Cash Register Company, while the Louisville Pottery Company displayed its flower-pots, jugs, etc., at Woolworth's five-and-ten-cent store. The Coral Ridge Clay Products Company, the newest of local clay manufacturers, showed its brick at the store of the Office Equipment Company, and the American Mosaic & Tile Company had a display in the windows of the Swiss Cleaners. The P. Bannon Sewer Pipe Company and the Kentucky Vitrified Brick Company, associated concerns, displayed in the windows of the Louisville & Nashville Railway ticket office in the Paul Jones building one of the principal buildings of the city. All of the manufacturers backed up their displays with aggressive advertising, and there is no gainsaying the fact that the work done was of great benefit to the business, impressing upon observers the value of brick and at the same time pointing out to them the desirability of patronizing their home industries wherever possible. A big parade the last day of the exposition was one of the features which attracted most attention, the various manufacturers having floats on which were displayed their products. M. J. Bannon, of the P. Bannon Sewer Pipe Company and the Kentucky Vitrified Brick Company, was in charge of the machinery and building trades' division of the parade, and got out a banner lot of manufacturers. It is safe to say that the exposition, which probably will be repeated annually, was one of the most successful affairs of the kind ever staged in Louisville.

Brick men of Louisville are anxiously awaiting the award of the contract for the brick to be used in the construction of Parr's Rest, a home for aged women, which will be built here in the near future. The general contract has already been awarded, and the brick business involved constitutes one of the juciest plums of the season. Nearly everybody in the business has been figuring.

Owen Tyler has taken orders for a good-sized lot of Canfield coping and Canfield raggle block for use in the tannery building of the Wm. Schuff Company and the Seelbach Hotel powerhouse.

The R. B. Tyler Company has been handling a good lot of work. Donald McDonald, Jr., of that concern, reports orders for 125,000 Artbrique, the product of the Yingling-Martin Brick Company of Johnsonburg, Pa., for use on the Alfred S. Brandeis school, to be erected in Louisville; 25,000 brick of the Warren B. Ferris Brick Company, of Columbus, Ohio, for use on the same building; 50,000 Kittanning brick, from the Foster Sales Company, Bradford, Pa., on the Barton residence at Paris, Tenn.; and 50,000 Dubltex brick from the Everhard Company, of Massillon, Ohio, for the residence of Dr. R. L. Woodward in Louisville. Business conditions generally are regarded as favorable by this company.

The city of Louisville is asking for bids on a considerable amount of brick street work. Bids were received September 4 for the construction with brick of Shelby, from Breckenridge to Kentucky; Fifteenth, from Maple to Kentucky and

Walnut, from Garden to Campbell. The estimated cost of the work is $30,000.

The Dillehay Brick Company, of Danville, Ky., has been awarded a contract by that city to construct sanitary sewers between Third and Fourth streets; a storm sewer between First and Green streets, and other sewerage work. The total amount involved is in the neighborhood of $10,000.

Fire which broke out recently in the plant of E. P. Denton located a mile from Frankfort, Ky., caused the total destruction of the plant, with a loss in excess of $5,000. Most of the loss is covered by insurance, and it is expected that Mr. Denton will rebuild. Lack of water facilities was keenly felt at the fire, a bucket brigade forming, but being unable to cope with the flames.

Maryland and Delaware.

The outlook in the brick business at present is very encouraging, indeed. Bricks are wanted and wanted badly, and it is believed that when the fall building operations are at their height the demand will be considerably in excess of the supply. In Wilmington, Del., there has been a noticeable building boom forecasted in recent real estate transactions, and bricks are sure to be in demand there. In Baltimore there are so many extensive public improvements under way—fallsway, new sewerage system and paving—in addition to the new houses going up that the inability to get all the clay products needed is a decidedly serious problem. One builder announced recently that he intended erecting 1,000 brick dwellings and plans are already under way to launch this undertaking. Other builders are doing almost as well.

Deliveries have not been as great as last year, but the manufacturers are doing their best to catch up. The receipts have been much larger than for the corresponding month of last year, and the same is true of the orders which were filed.

Ohio.

Steadiness has characterized the brick industry in all its branches in the central and southern part of the Buckeye state, the only cloud on the horizon being the growing car shortage, which is already hampering shipments at some plants, and threatening others. Ohio depends so much upon out-of-the-state shipments, that lack of transportation facilities often turns what might otherwise have been a good year, into one that nets little or no profit. The year has been an exceptionally good one for most of the face brick plants, so far as volume of shipments is concerned, but prices have not been altogether satisfactory. The closing down of the Puritan plant at Hamden is a direct result of the nability of the management to secure what it believed was a fair cost-plus-reasonable-profit price, and not, as currently reported, on account of being overstocked. The daily papers, in reporting this plant's closing, chewed ustily on the fact that there was a million and a half brick on hand at Hamden. This, as every manufacturer knows, is a small stock, on a plant with a capacity of 00,000 face brick a day. Many plants with 25,000 capacty carry from one to two millions over the winter months.

The Ohio State Highway Commission is putting in an experimental road on the extension of South High Street, Columbus. This road will be watched with considerable nterest by brickmakers, as in the 50 or more sections hat are being laid, concrete macadam and brick are being used, various makes of brick being laid at different points, and various kinds of fillers being used. Under he paving brick are various bases, concrete, crushed tone and rolled clay, the object being to determine not only the best paving material, but the best foundation for hat material, cost of laying and maintenance being conidered.

Governor Cox is agitating the question of establishing brick plant that will be operated by convicts from the Ohio penitentiary and other penal institutions, to make aving block for some of the State roads and face and ommon brick for use in rebuilding state buildings. The roject has been tacitly approved by the National Paving Brick Manufacturers' Assn., but is meeting with some pposition among face brick and common brick makers.

Secretary of State Graves, of Ohio, recently declared number of Ohio corporations legally dead because of heir failure to pay the Willis corporation tax. Among hese are the Columbus Clay Products Company, the

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Literature on Application

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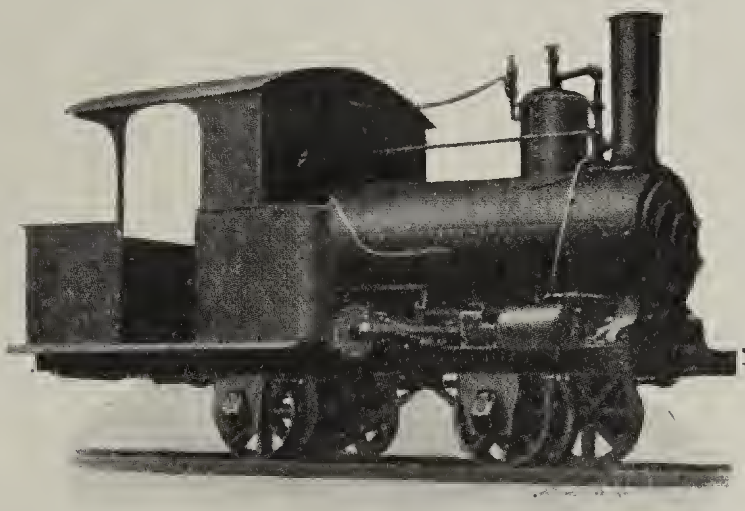

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Make Brick and Profit All Year Around

Why shouldn't you make Brick and profit all the year around instead of only in certain seasons? Or why shouldn't your ware be as good one season as another?

Aren't your personal needs as great in winter as they're in summer—and isn't your expense **going on** more or less, even if there is nothing **coming in**?—Of course!—And here's how to solve this problem. Install

THE NATIONAL SYSTEM OF DRYING BY EXHAUST STEAM

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The Martinsburg Brick Wagon

They **slide out** easily in a nice pile.

You increase the capacity of each team 30 to 50%.

We can refer you to users in every section who handle all kinds of brick.

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Columbus Tile and Brick Company and the Dow Brick Company. All of the corporations have been out of business for one or more years.

Considerable interest has been shown in shipping circles in the appointment of the new utilities commission, which was made recently by Governor Cox. The new members of the commission are Oliver H. Hughes, of Hillsboro; William L. Deschant, of Middletown, and Edward W. Doty, of Cleveland. This commission has full power over shipping in Ohio and as brick forms a large part of Ohio's shipments, the clay-products men are wondering if the change will or will not benefit them.

The new state mechanics lien law, which has been in force for more than a month is giving satisfaction to every one, including the brick maker and dealer. The law seeks to protect the material men as well as the contractor in all contract work and requires that affidafits be filed showing that the contractor has paid for materials and labor before the owner makes payments to the contractor.

The Pacific Coast.

Building activities in the Pacific Coast cities have increased quite noticeably in the last month. The record of permits issued in San Francisco is still below last year, though $200,000 higher than for the previous month; but it must be noted that no permits are taken out for the municipal work and Exposition construction, operations on which are now well under way. This work, if included in the permit valuation, would raise the total by about $1,000,000. The Oakland record of $1,265,053 is nearly double that of the previous month; while the Los Angeles total of $3,501,593 is the best since May. San Diego also is coming ahead, and Portland, Ore., shows a gain of about 30 per cent. Financial conditions are still far from satisfactory, but the amount of money available for building purposes is gradually increasing, and more activity is expected during the fall. Somewhat better progress, also, is being made with the sale of municipal bonds, though the immediate outlook for sewer work is not very encouraging.

The continued heavy production of common brick in this vicinity since the first of the year, combined with a rather light demand up to a few weeks ago, has at last caused a break in prices, which had been held with unusual firmness. The local figures have been reduced from $7.50 to about $6.50, and if the market stays long at this level there will doubtless be some curtailment of output, as a good many plants cannot be run profitably at this figure. There is a good prospect, however, of the higher price being restored very soon, as August has been the best month in a long time, and the letting of some unusually large contracts this month will take up the output of several plants for some time to come.

The principal matter of interest with local brick contractors and manufacturers of late has been the figuring on the Civic Center buildings, the City Hall and Auditorium. Bids on the former have just been opened, the two lowest being Brandon & Lawson at $119,800, and O'Connor & Collins at $121,000, a difference in allowance on brick from the old city hall making the bids about even. The contract was awarded to Brandon & Lawson, who will use the product of the McNear Brick Company. The amount required will be between 3,500,000 and 4,000,000 brick, of which about 600,000 may be available from the old city hall. It is possible, however, that these old brick may be put to other uses.

Bids for the municipal Auditorium will be opened in a few days, and about 2,500,000 brick will be required.

The United Materials Company, handling the output of the Port Costa Brick Works, reports a much better month than for some time past, their deliveries of common brick last month amounting to nearly a million and a half.

An interesting situation has arisen at Phoenix, Ariz., where the starting of a new cement mill has caused a price war i this material, together with an unusual amount of press-agen work. The brick men also are showing an enterprising spirit keeping their material strongly before the public, and stil claim 75 per cent of the building business, concrete buliding running 19 per cent and wooden only 6 per cent.

The Sunnyside Brick & Tile Company, headed by W. Anderson and W. Hook, has leased a tract of shale land i Rose canyon, 12 miles north of San Diego, Cal., on th Santa Fe railway, and is putting in a plant which will prob ably be ready for operation in a few weeks.

The old Richmond Brick Company plant at Richmond

Cal., which has been idle for several years, has just been reopened under the management of J. H. Curry. The output will include both common brick and matte face brick.

The San Francisco Architectural Club, the local organization of architectural students and young architects, plans during the coming fall to visit a number of the building material factories in the vicinity of San Francisco, with a view to gaining greater familiarity with materials and processes of manufacture. On the invitation of N. Clark & Sons, the large pressed brick and terra cotta manufacturers, the first trip of inspection for the season was made to their plant in Alameda on the afternoon of Saturday, Aug. 16. The club members to the number of about 150 made the trip, being escorted across the bay by J. R. Gwynn, manager of the company, who took the party into the works on a special car furnished by the Southern Pacific Railroad. At the plant the company was welcomed by A. V. Clark and Mr. Phillips, manager of the works. Before starting on the inspection the visitors assembled in the draughting department, where Mr. Phillips gave an interesting talk and demonstration of the stages of manufacture of architectural terra cotta. Two hours were spent in walking through the buildings and viewing the equipment of all departments in operation, after which luncheon was served and the party returned to San Francisco.

The Long Beach (Cal.) Brick Company, one of the most active boosters of brick in southern California, has aken the general construction contract for a new $1,-00,000 high school at Huntington Park.

H. H. Peterson, of Imperial, Cal., is preparing to re-pen the old brick yard at Holtville, in the Imperial Valley, which has been closed for the last two years. New transformers and electric power equipment are beng installed.

The San Francisco market has not yet shown as much ife as was expected, though there is a fair movement or this time of year. Prices are well maintained on ommon brick, but the local yards find it quite conenient to ship some of their surplus to points up the oast whenever opportunity offers. Quite a lot of brick as been shipped lately to points on Coos Bay, Ore., here there is considerable building in anticipation of ew railroad connections.

The California Brick Company has been incorporated t Oakland, Cal., with a capital stock of $400,000, by M. M. Birmingham, H. A. Kunz and J. F. Locke.

The Elsinore, Cal., brick yard is now running full last, with a daily capacity of 10,000 brick. W. D. Gamle, owner of the Colton, Cal., brick yard is operating he plant under lease, and is working on orders for about million brick to be delivered this year. About half of his material will be used in the new Lakeview Inn. The ard is an old one and has not been worked for about 5 years up to this spring.

The Northwest.

Reports from threshers give promise of a good yield n the Northwest and brickmakers and dealers are looking orward to a prosperous fall. Northern North Dakota shows spotted condition, but the situation elsewhere is very enouraging, and dealers are getting advance inquiries regardng common brick. The volume of sales in the territory how a substantial increase during the past three weeks and ealers are in good spirits over conditions, and like the utlook. If another late fall prevails, such as last year, it ill prove a bonanza.

It is interesting to note how little bricklaying has been eld up during the present season on account of labor isagreements in the Northwest. Other building trades have uffered several setbacks from this cause. The only halt n brick work of any size has been on the armory at Fairault, Minn., which was held up a few days by the brickayers demanding a closed shop.

NEW SAND BRICK.

Richard Osborn and John Roach, according to the insworth (Neb.) "Star-Journal," have perfected and patnted a means for making brick from pure sand by an lectrical process. By their method, it is claimed, 600 ounds of sand can be made into brick or tile for fifteen ents, as compared with fifty-five cents, the cost of cement or concrete, and be ready for use in thirty minutes. t is claimed that these brick are non-conductors of lectricity and not affected by change of temperature.

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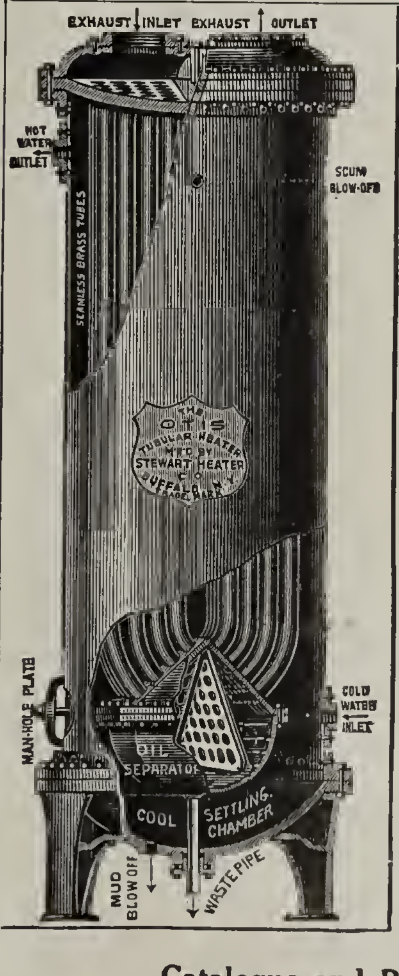

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To heat the feed water to the *boiling point* (210 to 212 degrees) with the exhaust steam without causing any back pressure, *also to extract the oil from the exhaust*, so that the exhaust steam after being passed through the heater can be used for other heating purposes, and the water of condensation for the heating system be returned to the boiler without the *additonal expense* of an *eliminator.*

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CHICAGO

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Richardson-Lovejoy Eng. Co.

Aerial Tramways.
Broderick & Bascom Rope Co

Automatic Cutters.
(See Cutters.)

Barrows and Trucks.
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Bonnot Co.
Brewer & Co., H.
Chambers Bros. Co.
Chicago Brick Machy. Co.
Electric Locomotive & Car Co.
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Freese & Co., E. M.
Martin Bk. Mach. Mfg. Co., H.
Ohio Ceramic Eng. Co.
Potts & Co., C. & A.
Raymond Co., The C. W.
Steele & Sons, J. C.

Barytes, Carbonate of.
Roessler Hasslacher Chem. Co.

Belts.
American Fabric Belting Co.
Berg Machy. Mfg. Co., Ltd.
Gandy Belting Co.
Imperial Belting Co.
Raymond Co., C. W.
Sawyer Belting Co.

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American Fabric Belting Co.
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Blocks.
Broderick & Bascom Rope Co.

Blowers.
American Blower Co.
Berg Machy. Mfg. Co., Ltd.
Raymond Co., C. W.
Rodgers Eng. Co., L. E.
Trautwein Dryer & Eng. Co.

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(See Engines and Boilers.)

Brick-Handling Machinery.
Mathews Gravity Carrier Co.

Brick Machinery.
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Bonnot Co.
Brewer & Co., H
Chambers Bros. Co.
Chicago Brick Machy. Co.
Eastern Machy. Co.
Fate Co., The, J. D.
Freese & Co., E. M.
Jackson & Church Co.
Martin Brick Mach. Mfg. Co.
Ohio Ceramic Engineering Co.
Potts & Co., C. & A.
Raymond Co., C. W.
Steele & Sons, J. C.

Brick Machines (Dry Press).
Berg Machy. Mfg. Co., Ltd.
Chicago Brick Machy. Co.
Raymond Co., C. W.

Brick Machines (Soft Mud.)
Eastern Machy. Co.
Martin Bk. Mc. Mfg. Co., H.
Potts & Co., C. & A.
Raymond Co., C. W.

Brick Machines (Stiff Mud.)
Bonnot Co., The.
Brewer & Co., H.
Chambers Bros. Co.
Fate Co., J. D.
Freese & Co., E. M.
Raymond Co., C. W.
Steele & Sons, J. C.

Brick Recutter.
Raymond Co., C. W.

Brick (Building).
Marion Brick Works.
Purington Paving Brick Co.

Brick (Fire).
Chicago Retort & Fire Bk. C
Davis Fire Brick Co.
Dover Fire Brick Co.
Evens & Howard Fire Bk. C
Federal Clay Pro. Co.
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Deckman Duty B. Co.
Dunn Wire-Cut-Lug Bk. Co.
Marion Brick Works.
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Cables and Cableways.
Broderick & Bascom Rope C

Cars (Air Dump, Contractors, Concrete, Creosoting, Dum Hand, Steam Railway, Min Industrial).
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Cars, Trucks and Turntable
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Electric Locomotive & Car C
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Gerlock, H. W.
Martin Brick Mach. Mfg. Co
Ohio Ceramic Engineering C
Orenstein-Arthur Koppel Co.
Raymond Co., C. W.
Weller Mfg. Co.

Cars (Clay).
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Berg Machy. Mfg. Co., Ltd.
Brewer & Co., H.
Chambers Bros. Co.
Chase Fdry. & Mfg. Co.
Electric Locomotive & Car C
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Gerlock, H. W.
Ohio Ceramic Eng. Co.
Orenstein-Arthur Koppel Co
Schultz & Son, A. L.
Weller Mfg. Co.
Weston, C. J.

Cars (Dryer).
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Chase Fdry. & Mfg. Co.
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Cars (Electric).
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Cars (Special).
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Gerlock, H. W.

Clay (Slip)
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Chambers Bros. Co.
Fate Co., The J. D.
Freese & Co., E. M.
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Raymond Co., C. W.

Clay Handling Machinery.
Brewer & Co., H.
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Clay Technologist.
Berg Machy. Mfg. Co., Ltd.
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IN THIS NUMBER—THE TRUTH ABOUT THE WAYNE CO. ROADS

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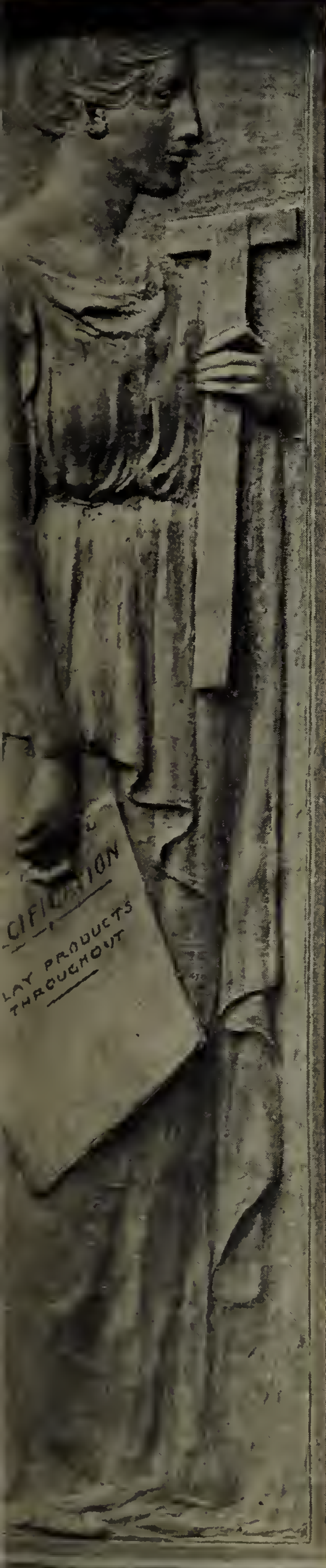

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CHICAGO, OCTOBER 7, 1913

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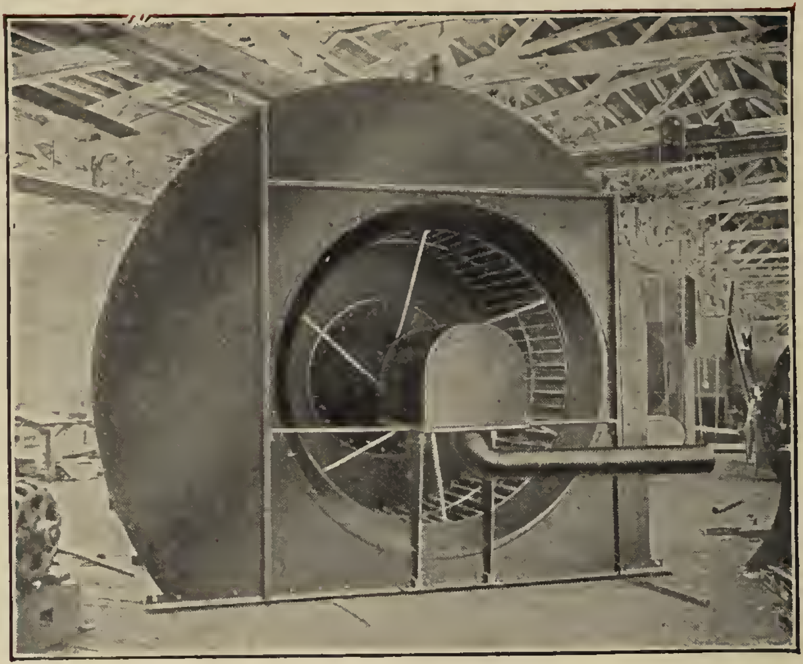

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Volume XLIII CHICAGO, OCTOBER 7, 1913 Number 7

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The Editor's Corner

A Department Wherein is Set Apart Comment
and Opinions on Some of the Graver Problems
Confronting the Clayworker and Co-Laborers

ELSEWHERE in this journal there is a most interesting story under the caption, "The Truth About the Wayne County Concrete Roads." This article was prepared by an engineering expert in Chicago at the instance of a village board which SOUGHT the truth.

This village board wanted to make some municipal improvements. It had heard much about the Wayne County highways because the cement interests have heralded them from Coast to Coast as the IDEAL form of PERMANENT pavement construction.

Tons and tons of printers' ink have been used in exploiting these highways.

Some of the property owners, influenced by this widespread publicity, were interested in what had been done in Wayne County. They had heard that the first cost was far below that of any of the other forms of highway paving and that the maintenance was slight.

Despite the fact that concrete heretofore had been proven unsatisfactory as a paving material, they felt it was worth while looking into the claims made for these now famous Michigan highways.

So the investigation was ordered. Engineer Paul Green was given full sway. He was not to be hampered. He was to get the TRUTH.

Mr. Green set about the work in a business-like way. Contrary to the custom of the usual visitor of an inquiring nature he did not apply for the SPECIAL guides the cement interests supply. He did not go to the USUAL source for his data.

What Mr. Green DID do was to enter Detroit quietly and unheralded. So careful was he not to disclose his identity he was able to spend several days in Detroit and vicinity without tipping off the reasons for his visit.

The result of Mr. Green's investigations, in view of this unbiased, unprejudiced investigation, is decidedly interesting.

One of the most exploited claims of the cement makers—the cost of maintenance, was punctured by Mr. Green in the early part of his investigation.

The cement manufacturers have advertised widely in the newspapers and the trade papers of the Nation that the TOTAL cost of maintenance of these highways, since their construction in 1909, had been only THREE HUNDRED DOLLARS.

This, of course, was an exceptionally low figure for CONCRETE construction, although VITRIFIED PAVING BLOCK, being a PERMANENT material, is known to have lasted a QUARTER OF A CENTURY and LONGER without a penny expended for repairs.

Mr. Green shows, however, that in ONE item alone—the cost of labor in two repair gangs which have been kept constantly on the job, has exceeded $24,000 for the four years, or annually about $6,000, and these figures DO NOT INCLUDE THE COST of tar and sand and other material used in making the necessary repairs.

Mr. Green, very conservatively, it must be admitted, says that from the figures he was able to obtain he would set the cost of maintenance of the Wayne County highways in 1912 and 1913 at $9,051.22, but admits that these figures do not represent NEAR the actual cost, which he believes, if obtainable, would be FIFTY per cent in excess of this amount.

There is a CONSIDERABLE difference between Mr. Green's figures and the ones the cement people publish.

There might be a still GREATER difference if Mr. Green had been able to get all the facts.

You see there is a most perfect maintenance system in Wayne County. On the surface, apparently, the cost IS low, for the cement makers are very careful to see that LITTLE OF the ACTUAL EXPENDITURE ever gets on the county's books and, therefore, the taxpayers are befuddled into believing they are getting something very cheap.

Who is paying for those two repair gangs, which cost on an average of $21 a day for labor alone.

The county? Apparently not. Who, then?

The cement maker might be more interested in seeing that the cost of maintenance is kept low—so far as the county's books are concerned. It might be to his advantage to even foot the bills when you pause to consider that these roads have been exploited as the very HIGHEST type of concrete construction and have been used in an attempt to make the people believe that they were of PERMANENT construction.

Possibly some of the thousands for labor might be traced to another source. It is known that some of the roads which went to pieces early have been re-surfaced but the items of cost were not charged up to the maintenance fund.

Where did they go? Ask one of the county commissioners and he will tell you that these particular roads are "EXPERIMENTAL" roads. The county is using them to test out materials. Therefore, what these roads have cost the past three or four years, naturally must be charged to some other fund. Can you beat it?

It is of no consequence here who really IS footing the bills.

We know now, beyond a doubt, and Mr. Green has absolute proof of every assertion he has made, that the maintenance cost of $300 is FALSE.

We know that it has reached at LEAST the sum of $30,000 and probably is MORE.

We know also the Wayne County roads are a patchwork of sand and tar.

We know also that constant watching and constant repairing is necessary to keep the roads in even FAIR condition.

We know also that if concrete is ever to enter into the construction of a PERMANENT highway there will have to be some REVOLUTIONARY CHANGES in methods and material.

After reading Mr. Green's report there can be no doubt but that the Wayne County roads are a failure. He says so deliberately and without mincing his words.

They are a failure first of all because they cost as much to construct to begin with as vitrified brick and are not as durable as brick.

They are a failure because they had to be repaired in most cases before the first twelve months had passed.

They are a failure because two repair gangs at an average cost of about $21 a day each had to be maintained to patch up the cracks and holes worn by traffic and to prevent futher disintegration.

They are a failure because some of the roads had to be re-surfaced, so bad was the wear.

They are a failure because the cost of maintenance is increasing year by year and will multiply each succeeding year in proportion to their age.

* * *

THE convention of the National Paving Brick Manufacturers' Association held in Cleveland, Ohio, recently, marks the beginning for REAL work for permanent highways and a better construction. There was none of the cut and dried papers. There was none of the undulating waves of self-praise. There was no buncombe passed from manufacturer to another.

The members of the tenth annual convention went to Cleveland to hold a congress of instruction. They KNEW HOW TO MAKE BRICK. They KNEW HOW TO MAKE GOOD PAVEMENTS. If there was one there who was NOT a post-graduate in the business he had no business there. Those who went there as brick makers were INSTRUCTORS, not APPRENTICES or STUDENTS.

This convention being a Congress of Instruction it was necessary to have some pupils to INSTRUCT, so all the leading engineers, municipal authorities and contractors of the country were invited to be present.

The invitation eagerly was accepted by scores. In fact, the registration list shows that there was a total attendance of 277, which does not near represent all the visitors, for many came after the registration day and did not enroll their names.

If there is any question as to the INTEREST shown by these visitors one only has to ask someone who was there to wipe away any doubt.

Headed by Dean Blair the "instructors" took charge of the pupils and for five days PRACTICAL lessons in brick manufacture and brick pavement construction were given.

The visitors were shown some of the largest paving brick plants in the country. From the time the raw clay was taken from Mother Earth until it was made into vitrified paving block and placed on the cars for shipment and then into actual construction work every step in the process was followed.

And most of all was the extreme care and precaution exercised in seeing that the product should be a GOOD product emphasized.

This one feature was a revelation to many of the engineers. Many confessed that they thought that paving brick were "just made" and whenever a GOOD brick was manufactured it was because it was an ACCIDENT.

Today these engineers KNOW DIFFERENTLY. They KNOW that the most RIGID INSPECTION is given at the plant to PREVENT imperfect brick. They KNOW that in the plants visited—and they are the representative plants of the more progressive sort, that not one item of precaution is left out.

The week was a most profitable one—not only to the visiting engineers, contractors and municipal authorities, but also to the brickmakers themselves, for this class communion—this excellent opportunity to exchange views and suggestions was seized by both sides.

The visitors went back to their daily labors with a better knowledge of paving block and its proper use.

The brickmakers went back to their plants with a greater knowledge of what the engineers and the contractors require.

Nothing but GOOD can come from this convention.

Both sides are closer together than ever before and it is to be hoped that the National Paving Brick Association will see that these heart-to-heart conferences shall be ANNUAL events.

Aside from the direct good the paving brick people have derived from this departure from the old-fashioned conventions, there is a great lesson therein for the clayworker in general.

The example set by the paving brick manufacturers is one that CAN and SHOULD be followed closely by every one of the organizations representing the other branches of the industry.

The face brick manufacturers, the common brick manufacturers, the hollow tile manufacturers, the tile makers, the sewer pipe makers, the terra cotta workers, the floor and wall tile makers, the potters—in fact, every branch of the clay industry has been taught a great and most profitable lesson.

This convention of the paving brick manufacturers has proven that conventions of this sort are NOT for the purpose of discussing methods and processes in manufacture. This must be left to the parent body—the National Brick Manufacturers' Association.

It is within the province of the N. B. M. A. to conduct a school of instruction—an institution for exchanging ideas and methods, among MANUFACTURERS.

This is its AVOWED purpose. This is its CHIEF excuse for existence.

And this organization IS doing this and will continue to fill its mission because the clayworker MUST keep up in the procession of progress. No matter how much he KNOWS today, he may learn more tomorrow.

It is for the other organizations, like the paving brick association, and all the others to take up the great work of TEACHING THE WORLD HOW TO USE THEIR PRODUCT.

The common brick manufacturer must teach the world the USE of common brick, and there is no better way than by practical demonstration.

The face brick manufacturer must TEACH the world HOW and WHY to use his product and there is no better way than by educational effort.

The terra cotta manufacturer must do the same thing—likewise the sewer pipe maker and the tile maker and all the others.

The drain tile manufacturers CAN and SHOULD call a congress to which should be invited all those interested in farm and land drainage. Actual demonstration in the manufacture of drain tile and practical demonstration as to the proper use under varying conditions should be given.

This same is true of the other branches of the clay industry.

But we MUST NOT STOP at these congresses of practical instruction. Suitable literature must be printed that will show the PROPER use of the products—that will show the VARIED and the ECONOMICAL use of what you manufacture.

The brickmaker can profitably use such articles as appeared in the Sept. 15 issue of this journal, which taught the use of RE-INFORCED brick in city sky scraper construction. He can profitably use such articles as the one on "Factory Construction" that appeared in the Aug. 1 issue of this journal.

The paving brick manufacturer can PROF-

ITABLY use such articles as the one appears in this issue of this journal on the "Truth About the Concrete Roads of Wayne County."

Instructive, convincing articles will benefit the drain tile men, the sewer pipe man and all the rest of the clayworkers and should be placed in the hands of every possible buyer in the country.

The clayworker must now begin to TEACH. He has mastered the art and the science of manufacture as it is today and he is keeping in touch with the march of progress.

It is, therefore, his province to INSTRUCT the ultimate consumer in the USE of what he makes.

The wonderful advancement of the concrete business of this country is due, mainly, to the great campaign of EDUCATION that has been conducted and which still is being conducted.

The cement manufacturer is spending millions in TEACHING the people WHY and HOW to use concrete. Their reward has been reaped in annual dividends that appalls the clayworker, who sits idly by and watches the procession as it passes his plant.

Why should not the procession PASS?

It is because no one KNOWS what burned clay MEANS. It is because no one knows WHY or HOW it can be used advantageously.

The clay plant and the product it makes is a mystery as deep as the Sphynx to the AVERAGE consumer.

Gather together the people you MUST in a great school of instruction.

This means you must reach them in congresses such as has just been held by the paving brick manufacturer.

It means that you must reach them through a persistent bombardment of literature that must INSTRUCT and TEACH.

* * *

A gain of $10,000 was made in the value of clay products produced in this country in 1912 over the previous year, according to the figures supplied in the annual report of the United States Geological Survey just issued. There was a loss, however, in several of the branches, which shows what INACTIVITY will do to an industry. It is expected, however, that the next report of the Geological Survey, which will cover the production of 1913 when the clay industry showed a renewed interest in promotion and publicity work, will record a decidedly increased valuation, for at no one period of the history of the industry has there been shown such an effort to educate the people in the use of burned clay. And one year hence, when the 1913 report is issued it is expected that a still greater progress will be recorded.

At the last meeting of the American Society for Testing Materials a suggestion was made that the colleges be interested in providing for research work in the proper use of brick instead of leaving this momentous problem to the mortar men and hod-carriers. A committee was appointed to take this matter up with one of the clay product associations and a meeting has been arranged for Oct. 19 between this committee and one appointed by the clayworkers. This is a step in a practical direction. We are prone to leave too much of the real important work to the hod-carrier.

* * *

Once it was said, "Make brick while the sun shines, because you can't in rainy weather." The modern dryer system laughs at rain clouds today.

* * *

A divided industry can expect to achieve no more than a divided business firm. Co-operation is as necessary in the one as it is in the other.

* * *

He who manufactures clay products and does not let the buying world know it is "hiding his candle under the basket." Printer's ink lights the Candles of Successful Business.

CHANGE OF PUBLICATION DATE.

With this issue of "Brick and Clay Record" a change in publication dates is made from the First and Fifteenth of each month to the First and Third Tuesdays in each month.

The change is made for the purpose of making publication more regular, as quite often the old dates fell on Sundays and caused delays.

Two issues each month, or twenty-four numbers a year, will be printed as before.

Elbert Hubbard Says: "Get Out and Meet the World"

FRA ELBERTUS, THE ROYCROFTER FROM EAST AURORA, PHILOSOPHIZES FOR THE BENEFIT OF "BRICK AND CLAY RECORD" READERS ∴ ∴ ∴

IN THIS, the second of a series of essays by this inimitable philosopher to appear in this journal, takes up the subject of "Keeping in Touch with the World in Which You Live." It is by rubbing elbows with your fellow men and exchanging experiences we learn. "Absorb animation," he urges. "Absorb amity, animal heat, love of work, charitableness, vim, vigor and vitality." It is thus we grow out—not ingrow.

THE successful man is the observant man. He is the man who calesthenics his cabeze, and currycombs his convolutions.

He is the man who possesses the fine art of eliminating the superstitious, unauthoritative, the worthless; of sifting in his cosmic ash-can the false and the true and eliminating the waste, the burnt-out bosh and bullconish bombast.

The successful man, the rubber stamper of the times, maintains a checking account in his own psychic first-national-on Sarah Bellum Street, in his Roof-Garden.

With the unfailing constancy of a perpetual motion machine, he deposits New Things there, on interest. And he is no glutton either. He loves not the golden doubloon of knowledge for its own sweet self alone. He loves it because he is in the game. He is the modern business man or craftsman. He is ever circulating his fund. He applies it as it applies to his calling.

And what is observation, Terese? I'll tell you there haint no such animile.

Observation is merely the ability to utilize your divine lamps—your orbs, glimmers—to good advantage. First you must see, then you feel, then you know. Informed men are those who can work intelligently. And it makes little difference how many eyes you've got either. A certain railroad genius can see more with one star-gazer than most folks can with two.

And then, too, it is strictly a case of mox nix aus if you are awry-eyed. If you've only a thirst for knowledge—you can satisfy it by imbibing the spirit of progress.

IF THE LATEST ISN'T OUT YET—KEEP A WEATHER EYE PEELED ON YER TRADE JOURNAL, MY HEARTY!

We grow as we do. We become by doing things—not folks.

The wrong way now may have been the right way then—infinite past.

And so we ingrow. If you are aware of anything worse here upon this blessed globe than a bandanna, amorphous-souled, Burbank-cactus backed, bazazza-ed, backsliding William Angora—retrogressive, what-was-good-for-Da-da-s-ditto-for-me, vimless, dummy firecracker, sawdust-filled blank cartridge of a human jelly-fish—kindly step up on the platform and whisper it in my ear.

(Forward in the car, please. Come, Terese, step lively. The conductor is about to yell 1914.)

He is the kind that does not read the journal in his own field. He synchronizes past and present. And his desert is what he deserves—oblivion.

We must give and sweat, in order to live and get! Reciprocity! We receive co-measureably with what we give. But you must have something to give. Mere willingness and right intent is not enough. You are being paid not only for what you can do but for what you **actually do**—for results.

If one is ever going to amount to anything in his own line he must be able to do a thing better than the other fellow. Otherwise obsolescence for his—down in the muck and mire with the rest of the growdlings.

To give or not to give—to be or not to be—aye, that is the question. If you agree accordingly, our panecea, of ,"Be Up-To-Date! Know!—Know! Know!" becomes operative, practical.

The man who knows is the man who goes—up in the world of dollars and sense—in the estimation of others and in his own.

He reads his Specialized journal—

Who is making that disturbance in the rear there? Raus mit 'em!

Trade journals are the heralds of industry and prosperity. They are the radicals in the convention of progress. They are experimentors, builders, systematizers, organizers, pioneers, in their own particular fields —

They are the consecrators and conservators. They are the cats that pull the chestnuts out of the fire—for our delectation. So there!

They are the Courts of Last Conjecture. They know! It is their business to know—that is why they exist. And we learn all we know from them. For journals are nothing but crystallized fact—predigested food of Experience. You may apply the sauce of disbelief ad-lib-eratum. I always take mine dry. Waiter, a White Rock, if you please. And Experience is the Universal Educator.

Trade, Class and Technical Journals make it a business to tell the Truth. They do not deal in hearsay, rumor, misinformation or hypocrisy. Life is too short, and they know it. They taboo the nebulous. They omit the intangible. They venture to verify and verily—they **do.**

They give a man courage, animation, ambition. They are not published for mummies.

If you would savvy of the new wrinkles in your business or profession; if you would know how other folks are progressing, thinking, what methods they employ to achieve their ends—and how to improve your condition and position—if you would converse with the men who are headliners in your field, who have already made good but who are still discontented, still striving, hoping, aspiring to greater things and who have worked out their own salvation—if you would continue to be such a man yourself—read your Specialized Journal!

The man who refuses to get out of his shell, is a Lobster—And who wants to be a Lobster?—Nix on the Miserere Lobscouse. I hear you almost saying to the man behind the procession: "Quit hibernating! That recluse stuff don't go."

Get out and meet the world. Absorb animation, amity, animal-heat, love of work, charitableness, vim, vigor and vitality. Resolve to do, or die doing. Absorb, like a lusty bull calf, from that big, blessed, beneficient enterprise—The Trade Journal.

Hi there, keep away from that elephant! What do you know about indestructos?

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* * *

The third of these essays by Fra Elbertus will appear in the October 21 issue of this journal. Mr. Hubbard, who always talks straight from the shoulders, promises to show no compromise, and expects to tell the brickmaker a few facts that will be profitable to him to know.

Engineers Meet

Tenth National Convention of Manufacturers Upsets All Precedents in Methods and Achievements

These two pictures, made by a Staff Photographer, were taken on the Brick Paved Streets of Cleveland during the inspection tour of the Engineers and Municipal Authorities. Secretary Blair, of the N. P. B. M. A., is shown in the center of the group at the left explaining method of construction to a number of engineers. At the extreme right in the other picture, Assistant Secretary MacDonald is pointing out the advantages of Cement Filler.

NUT SHELL FACTS ABOUT BIG CONVENTION OF PAVERS

OCCASION—Tenth Annual Meeting of the N. P. B. M. A.

PLACE AND TIME—Hotel Statler, Cleveland, Ohio, Sept. 15-17, 1913.

ATTENDANCE—Registration, 277; estimated unregistered, 150; total attendance, 427.

PURPOSES—Transaction of regular annual business, including the election of officers, and to open up a practical field of work by inviting the engineers, contractors and municipal authorities of the country to come and get a first-hand knowledge of proper construction.

ACHIEVEMENTS—Brought nearly 200 engineers and municipal authorities to the convention and thereby made possible the dawn of a closer relationship between the manufacturer and user of vitrified paving block.

NEVER in the history of the National Paving Brick Manufacturers' Association has a convention been fraught with so much practical achievement as the Tenth Annual meeting held in Cleveland, Ohio, Sept. 15-18. Casting aside all precedent and eliminating the usual program of set papers, the two days' session was devoted to entertaining leading engineers and municipal authorities of the nation with the purpose of showing them how brick were made and how to use them properly. The success of this meeting probably will revolutionize the conventions of all clay product organizations in the future.

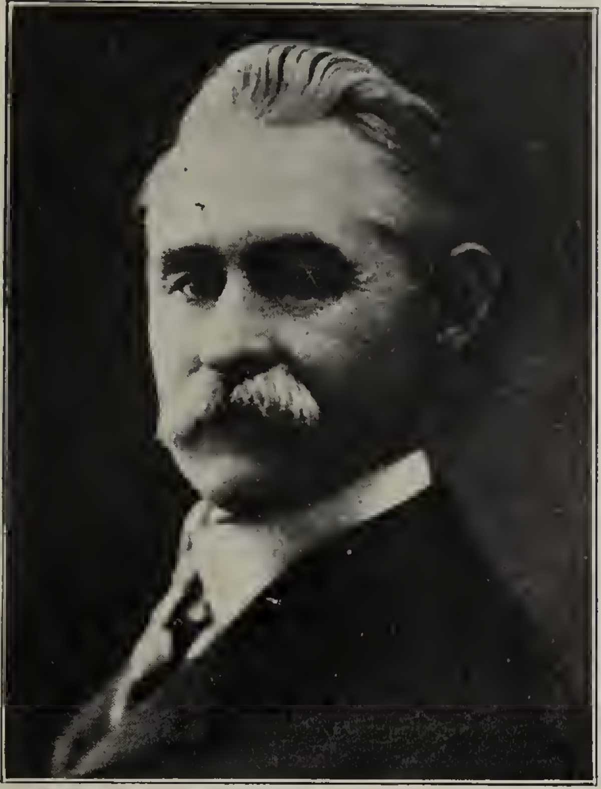
WITH more than one hundred engineers, contractors and municipal and county officials from various sections of the country meeting with them, the members of the National Paving Brick Manufacturers' Association upset all precedent in the Tenth Annual Convention held at Cleveland, Ohio, Sept. 17 and 18, and paved the way for a closer relationship between the men that make vitrified paving block and the men that use it.

There was a total enrollment of 277, one of the largest in the history of the organization, but these figures do not represent the full attendance for there were many visiting engineers who did not sign the register. It is estimated that fully 200 engineers and city officials were in Cleveland as nearly that number accepted the invitation one day to inspect the streets of Cleveland and the highways of Cuyahoga County.

Among the visitors were some of the most prominent engineers and municipal authorities interested in paving in the country. In addition to these there were the di-

Paving Brick Men

E. H. CHRIST,
Consulting Engineer, Grand Rapids, Mich.



EDWIN A. FISHER,
City Engineer, Rochester, N. Y.

F. J. CELLARIUS,
City Engineer, Dayton, Ohio.

ficers and representatives from the two organizations that mean so much to the manufacturers of paving material—the American Society of Municipal Improvements and the American Society for Standardization of Paving Materials. These were headed by C. C. Brown, editor of "Municipal Engineering," and chairman of the joint committees from both societies; E. H. Christ, consulting engineer from Grand Rapids, Mich., chairman of the brick committee from both societies; F. J. Cellarius, consulting engineer of Columbus, Ohio, a member of the same committee, and E. A. Fisher, city engineer of Rochester, N. Y., also a member of the joint brick committee.

Others present were A. H. Hinkle, commissioner of public works of Detroit, Mich; N. S. Sprague, of Pittsburgh, Pa., president of the Society for the Improvement of Pavements; G. A. Kensey, chairman of the Board of Local Improvements, St. Louis, Mo.; Julius G. Gableman, assistant city engineer, Chicago; J. T. Voshell, assistant engineer United States Public Roads Department; Prof. A. V. Bleininger, chief of the United States Bureau of Standards; M. A. Stuart, city engineer of Toronto, Canada; Prof. Edward Rich, sanitary engineer, state of Michigan; Jesse Taylor, editor "Good Roads."

While there were only two days of the convention proper there was in reality a four-day's session, the first two days of the week, Monday and Tuesday, Sept. 15 and 16, being devoted to a special trip of inspection in which Secretary Blair of the Association headed a party of ten to Canton, Alliance and Youngstown, Ohio, where the paving brick plants of those cities were visited and the method of manufacture and plant inspection thoroughly studied. On this trip additions were made to the party and by the time it had returned to Cleveland Tuesday night it numbered twenty.

This inspection trip was one of the most profitable features of the conference as it enabled the members of the joint committees from the two societies to get a first-hand knowledge of the manufacture of paving block and to realize what care and precaution the manufacturers take to send out a perfect product.

It is expected that this trip alone will do considerable to correct evils in the use of paving block and if the entertainment of the visiting engineers and city officials does nothing more the National Paving Brick Manufacturers Association will have made a most profitable investment.

A portion of Wednesday morning was devoted to a brief business session in which the officers of the Association who have guided its destinies the past three years, were re-elected. The rest of the morning was devoted to a special tour of some of the streets of the city. Wednesday evening the annual banquet was held. Thursday a caravan of fifty automobiles took the visitors over a more extensive tour of the city and country highways.

That the convention was a profitable one to both the visitors and the members of the Association may be gained by interviewers a representation of "Brick and Clay Record" had with some of the engineers.

"I believe the brickmakers have done a most wise thing in inviting us to meet with them," said Chairman C. C. Brown of the joint committees of the two societies. "It has given us the opportunity to see the real conditions that confront the manufacturer. The solution of good brick streets is rigid inspection. I mean by that you must not only make a good product but see that your good product goes into the street properly. I certainly shall return home much benefited by my contract with the members of this association."

E. A. Fisher, city engineer of Rochester, N. Y., declared he found the trip a most profitable one.

"I believe, however, I found more profit in my two day's trip to the plants under Mr. Blair's guidance. I was surprised at the care used in shipping a perfect block. This rigid plant inspection suggests the wisdom of the city having an inspector located at the plant. It

EXPLAINING THE PICTURES ON THE OPPOSITE PAGE

The pictures shown on the opposite page were taken by a staff photographer, and are scenes on the two-days' inspection tour f the special technical committee of the two societies—The American Society of Municipal Improvements and the American Society or Standardizing Paving Materials, which, accompanied by Secretary Blair and guests, visited the paving brick plants of Ohio. he plants of the Metropolitan Paving Brick Co., at Canton; the Alliance Clay Products Co., of Alliance, and the Bessemer Limestone o., at Youngstown, were included in the itinerary. Those of the committee in the party were: C. C. Brown, chairman of the ommittee of standardizing specifications of the Municipal Society; E. H. Christ, chairman of the brick committee of both societies; . A. Fisher, member, and F. J. Cellarius, member. The picture on the left at the top shows the party at the railroad station in anton, Mr. Brown being on the left, Mr. Cellarius, the second from the left; Mr. Christ in the center with the hand bag, and Mr. isher on the extreme right. Secretary Blair is the man in the center at the top and also is shown at the right explaining the horough plant inspection of the manufactured product of the Bessemer plant. The two pictures just below show the committee atching this inspection. The other pictures are of the committee looking at some new construction work on the streets of oungstown, mention of which is made on another page.

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ertainly would save both the manufacturers and the ity a lot of money.”

Others in the party were greatly impressed by the orm of construction used on Cleveland's streets. G. . Kensey, chairman of the Board of Local Improvements f St. Louis, Mo., was especially interested.

“We have some very poor construction work in our ity.” he said. “So serious was our problem that five f us came up here to see what you could tell us. I am ot ready to say that our trouble has been in our methds rather than our brick but I will admit that we are artially convinced and we are going back home to determine some line of action that will be along the same ines you have been working on here.”

It was Monday morning early that Secretary Blair f the Association left the Hotel Statler with a party of ten pecially invited guests for a two days' inspection trip o some of the paving brick plants in Ohio. The purose of the excursion was to give the guests a firstand view of the manufacturer of brick and to show the xtreme care that was exercised in not only the manuacture to make a perfect block, but also in culling at he plant so that a uniform, perfect product may go out n the job.

In this party were, besides Secretary Blair: C. C. rown, chairman of the joint committee from the two ocieties; Edward G. Christ, chairman of the joint brick ommittee of the two societies; F. J. Cellarius, member f the same committee; E. A. Fisher, another member f the committee; J. W. Hall and D. H. Padgett of the estport Paving Brick Co., Baltimore, Md.; H. C. Adams f the Danville (Ill.) Brick Co.; C. L. Rorick, business anager of “Brick and Clay Record,” and Iverson C. ells, managing editor “Brick and Clay Record.”

Through a wreck ahead on the road over which the nitial part of the trip was taken the party was nearly wo hours late when it arrived at Canton, Ohio, where he Imperial plant of the Metropolitan Paving Brick Co. as to be visited. The following officers of the Metroolitan Company, H. S. Renkert, treasurer and general anager; J. B. Barbour, secretary and general superinendent; A. P. Maurer, manager of sales; O. T. Witter, raffic manager and A. L. Curry, salesman, met the party t the train and escorted them to autos, which took the isitors out to the Imperial plant, which was only a short istance from the city. Nearly two hours were spent here nspecting the entire system of manufacture and shipnent. This is one of the largest and most up-to-date lants in the country making paving block and the enineers in the party had an excellent opportunity to see he methods in use.

A visit was made first to the shale bank where the argest steam shovel made was busy at work digging nto Mother Earth and taking out at one time a car load f the shale that has made the Metropolitan brick famus the country over. A steam locomotive is employed o take the cars to the storage shed where two kinds of clay—a soft or more plastic clay and the hard shale are weathered.

The visitors followed the shale into this storage shed and watched the intricate system of belt conveyors take its load and carry it to the dry pans where it was pulverized and there carried by belts to the mixing device. The extreme care in getting the proper, uniform mixture of the two qualities of shale appeared to interest the engineers for they remained at this particular point in the plant for a longer time than at any other.

The trip of inspection took the party through the machine room where repressed block were being made. Considerable disappointment was shown when it was ascertained that the Dunn Wire-Cut-Lug block were not being cut that day. The Bonnot represses, however, were in full operation and afforded considerable discussion as to the merit and demerits of the two styles of block, both of which this plant manufactures.

The delay earlier in the morning, caused by the railroad wreck curtailed the visit to the Metropolitan plant, the party being unable to visit the second plant of the company as had been planned.

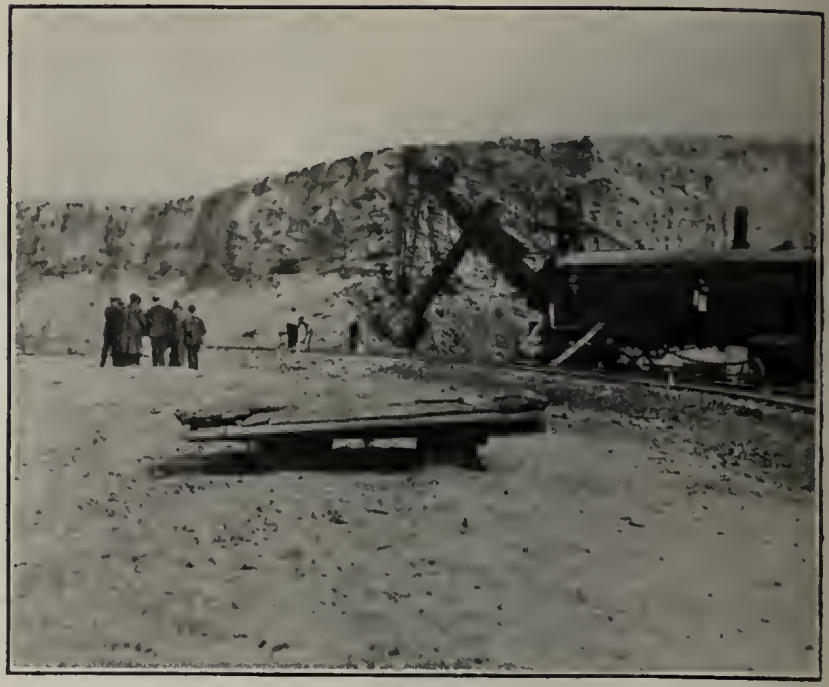
The officers of the Metropolitan gave the visitors an elegant luncheon at one of the clubs, shortly after which a rush was made to the interurban cars and Secretary Blair and his guests were on their way to Alliance, Ohio, where a visit was to be made to the Alliance Clay Products Company's plant.

General Superintendent J. B. Wilcox and B. F. Webrecht, one of the directors, together with other members of the organization, met the visitors with autos at the interurban station and drove them out to the plant.

The Alliance plant is one of the few model plants of the country and while it has not as large a capacity as some of the others seen on the trip, it has a reputation for turning out a product that is second to none. It might be added here that Supt. Wilcox is already drawing the plans for a new plant alongside the old one that will be triple in capacity to the present one and that he promises to have the new one embody all the latest improvements and wrinkles in machinery and other equipment.

One of the first things to greet the visitor's eye on his arrival at the Alliance is the office building. This structure is made of red face brick and is a model in office building architecture. Standing in a commanding position as it does on the company's grounds it prepares the way for the orderly arrangement of the kilns, the plant proper and the rest of the factory.

This office building is two stories high with a basement and it is not only pleasing to the eye from the exterior but a delight from the interior. Brick is used on the inside wherever possible, a handsomely designed chimney and fireplace being one of the features of the decorative art practiced. The business offices are handsomely but neatly furnished and give an atmosphere



These pictures, taken by a staff photographer show the party of engineers on the inspection tour of Ohio plants. The one at the left was taken in front of the office of the Alliance Clay Products Co. The other is in the shale pit of the Metropolitan Co. at Canton, the party viewing the largest size steam shovel made—a Thew.

of solidity, of order and of system that brought forth compliments from each member of the party.

The same orderly arrangement of the yard and the same neatness and system of the kilns and the plant proper is shown. The men employed reflect this in their work. There is not a false movement among the laborers—not an unnecessary crook of the arm among those at the machines.

During the visit to this plant the members of the technical committee exhibited considerable interest in the manufacturing methods and entered into discussion not only with Secretary Blair, but with Supt. Wilcox and with employes about the plant. The few hours spent at Alliance were declared to be some of the most profitable of the trip.

The visitors stopped at Alliance over night as the guests of the Alliance plant owners and left early next morning by train for Youngstown where the two plants of the Bessemer Limestone Company near that city were to be inspected. The train was met by the following officials of the company:

C. C. Blair, general manager; John R. Rolland, treasurer; F. R. Kanengeiser, general superintendent; E. P. Foster, A. J. Tubrey and W. H. Whitworth, salesmen.

Autos took the party out to the No. 1 or oldest of the two plants first. Most of the trip, nearly fifteen miles in length, was made over well-paved brick highways. The occasional gap of rough macadam or concrete, with their many holes and bumps, afforded a decided contrast.

The Bessemer company operates probably the largest paving brick plants in the world, and for this reason, if for no other, their inspection was of interest.

The engineering party watched every detail of the manufacturing process, starting with the raw shale at the pit and continuing until the block were made, dried and burned. The equipment here naturally must be of the greatest magnitude and of the latest improvement, but so perfect is the organization the product is produced with the same precision and with just as much care as is found in smaller plants.

The No. 2 plant, which was visited later, probably interested the visitors the more because it was not only larger, but it was more modernly equipped. The kiln here is of the Haigh-Hoffman type and is said to be the largest continuous kiln in the world. Considerable time was spent by the engineers in learning the operation of this and it proved a revelation, especially the small amount of fuel required to operate it.

What seemed to interest the visitors the most was the careful inspection given at the plant of the manufactured product and, as this had a direct bearing on later incidents of the day, a brief account of the system in use will not be amiss.

The Bessemer inspection requires culling three times between the kiln and the car which stands alongside the kiln. In other words the brick are examined when they are first taken from the kiln and placed on the gravity carriers that convey them outside to the car. Whatever imperfect brick escape the eye here must pass under the inspection of a second man after they leave the kiln. Again, at the car, the men who take them from the carrier cull out. The result is that the Bessemer have few poor brick to go on the job.

The inspection is rigid and from the manner, method and care with which it was being done, it does not seem that brick other than No. 1 in quality would ever get intermixed in the shipments. In their desire to make popular their product, the members of the Association not only exercise this care in the selection of their shipments, but they promulgate and extend the right in their "No. 1 Specifications and Directions for Laying Vitrified Brick Pavements" to reject any brick or improper quality during their placement in the street. In a final opportunity when the rolling of the surface shall have taken place, by their own direction all broken or injured brick are to be taken up and replaced with satisfactory ones.

The engineers, especially Chairman Brown and Chairman Christ, were particularly interested in this system of inspection and listened attentively to Secretary Blair as he explained it.

"Gentlemen," said Mr. Blair, "one of the chief reasons for bringing you on this trip is to show you this kiln inspection because I am of the opinion that every plant in the country should see that it is enforced and that every city where paving is being done should have its own inspector right here instead of on the street. This would save a vast amount of labor on the streets and therefore save the city unnecessary labor. At the same time it would be a great saving to the manufacturer.

"I ask you to note what great care and precaution is exercised here in turning out a perfect block. These men, and they represent the spirit of all our progressive manufacturers, are just as eager to make a good product as you are to receive it. They want to give you as perfect a block as can be made and are exercising every care to see that when it leaves their plant it is perfect."

Chairman Brown and other members of the committee agreed with Secretary Blair that his position was correct and it is barely possible that at the next meeting of the American Society for Municipal Improvements, which convenes in Wilmington, Del., later this month, some suggestion will be made along this line.

After the inspection of this plant luncheon was served the guests, the Bessemer officials acting as hosts. In the afternoon autos were procured and the party was taken over the streets of the city. Considerable brick paving is being done in Youngstown and at one or two places where this work was in progress the autos were stopped and the visitors carefully inspected the methods employed.

These are the Executive Officers of the Metropolitan Plants at Canton, Ohio. Reading from Left to Right They are: J. B. Barbour, secretary and general superintendent; A. P. Maurer, Manager of Sales; H. S. Renkert, Treasurer and General Manager; A. L. Curry, Salesman; O. T. Witter, Traffic Manager.

While the method of construction interested the engineers, inasmuch as it was followed closely the No. 1 Specifications of the N. P. B. M. A., the unusually large number of culls on both sides of the streets on two jobs inspected, proved far more interesting to them, in view of the lesson taught them earlier in the day when such rigid inspection was observed at the Bessemer plant.

On one of the streets the visitors examined the culls closely and pronounced most of them perfect block and drew from General Manager Blair of the Bessemer plant that his concern faced an unusually hard problem in his home town.

"We delivered on this job, as well as all others we sell for, just such brick you saw leaving the plant today," said Mr. Blair. "We exercised the utmost care at the kiln and at the car. The trouble here is with the inspector. The manufacturer has that to contend with all over the country."

One of the visitors approached the inspector that was on the job, picking up a culled brick, asked him why he rejected it.

"It's too soft," he said hesitatingly.

His questioner laid the brick alongside another that had been passed by the inspector as "O. K." and asked him if he could see any difference.

The inspector was speechless. When pressed as to how he determined the quality of the brick he finally stammered:

"Them's my instructions. That's all I know about it."

One of the engineers in commenting on the incident remarked that the inspector apparently did not know enough to keep out of the wet.

The contractor was appealed to.

"I am powerless," he replied. "That fellow has just about as much business passing judgment on these block as he has trying to argue a case before the Supreme Court. I've got to stand for him, however."

"What does this contract amount to?" was asked by an observer.

"The city is paying $15,500 for this little bit of street."

"That seems to be quite a responsibility, an improvement involving all that money, to shoulder on a man of his calibre," someone commented.

"Oh, that's a mere drop!" exclaimed the contractor. "That same fellow has inspected $175,000 worth of paving for me this season alone."

One of the engineers turned to Mr. Blair of the Bessemer Company:

"Good Lord, Blair! It's a wonder you are not bankrupt. A condition like this is proof enough that the manufacturer is at the mercy of such incompetents as this fellow."

Secretary Blair at the Left, and C. C. Blair, General Manager of the Bessemer Limestone Co., with a Group of Guests are Shown at one of the Bessemer Kilns.

A train late in the afternoon took the party back to Cleveland, several of the members of the Metropolitan and Bessemer plants accompanying.

The Convention proper opened Wednesday morning at 9 o'clock in the Lattice room of the Hotel Statler, with President Deckman presiding. The program of papers read by the members which usually occupy the entire time of the convention, was omitted and the session made as brief as possible.

President Deckman was re-elected for the fourth time, as the president of the Association as were J. W. Robb, vice-president, C. C. Barr, treasurer, William C. Blair, secretary and H. H. MacDonald, assistant secretary.

H. S. RENKERT.
Treasurer and General Manager of The Metropolitan Paving Brick Co.

The board of directors and standing committees were selected as follows:

Board of Directors: J. B. Wilcox, Eb. Rogers, R. A. Doan, W. N. Alderman, C. C. Barr, C. C. Blair, J. B. Hammond, J. M. Brady, J. W. Robb, D. Warren De Rosay, H. C. Adams, C. J. Deckman, C. P. Mayer, J. G. Barbour, F. L. Manning, O. N. Townsend, D. R. Potter, John H. Simpson, R. L. Lewis, John W. Hall, W. R. Barnhart, Jr., W. P. Blair, L. A. Culver, G. O. French, J. R. Zmunt.

The Executive Committee: Eb. Rogers, W. N. Alderman, C. P. Mayer, J. B. Wilcox, H. C. Adams, D. R. Potter, L. A. Culver.

The Advertising Committee: H. H. MacDonald, F. M. Brady, D. Warren DeRosey, L. J. Murphy, J. M. Hoskins.

The Traffic Committee: J. G. Barbour, F. L. Manning, J. W. Robb, G. O. French, J. B. Hammond.

The Office Committee: C. J. Deckman, C. C. Blair, J. G. Barbour.

The reports of the officers were then read. President Deckman's follows:

Six months ago the Ninth Annual Convention of the National Paving Brick Manufacturers' Association held its session in Chicago, and so amended the by-laws, governing the Association, as to require our meeting in regular annual convention at this, or some other suitable time, that we might be able to show and demonstrate to our members and visitors, proper construction of brick streets and roadways, and it devolves upon me the necessity of rendering to you a report covering these few brief months.

In the matter of members, the meeting in Chicago was not as largely attended as previous gatherings of our Association, but the harmony and unity of purpose was far beyond similar conditions in the history of the Association's existence.

The reports of your officers were most gratifying in the extreme, and contained many thoughtful and useful suggestions, a large number of which were considered favorably by the Association for its future government and welfare.

The complexion of your official family, except in the directorate, remained unchanged, and, upon the return from the Convention your officers renewed their interests and zeal for the greatest good to our membership and the industry.

The first six months have developed the greatest volume of business it has ever been the pleasure of our membership or the industry to enjoy, all of which can be more or less directly traceable to the energetic efforts of your secretary and assistant secretary in their unselfish, self-sacrificing devotion to the interests of the industry, ably assisted by the various good roads' organizations of the country, enthused by our wide publicity and newspaper advertising, and the high standard, fearless and truthful information as presented to the public in our literature which has been dispensed throughout the whole country in the most careful and systematic manner.

For this splendid and prosperous business showing, I feel that I voice the approval of all of you when I express the thanks and congratulations of the Association to our secretaries for the excellent results obtained in relation to their work.

It is not my purpose to inflict upon you a lengthy report at this time, because you do not need one. The Association does not require it, and I feel there are but two or three important factors of interest to which I care to briefly call attention, and they are that you, each of you, should pledge anew your loyalty and support to the Association in the most enthusiastic and encouraging manner and means possible, financially and otherwise, that lies within your power so to do, reporting your complete yardage faithfully and paying your assessments promptly; We need more members, and we need the unselfish and enthusiastic, full and loyal support of all of our present membership in the interests of the industry, and the methods we advocate. May your interest in the Association and its work increase with your increasing business prosperity.

At our March meeting in Chicago, upon the report of the Committee on officers' reports, the Association recommended the use of a practical, uniform specification for the proper laying of paving brick, for use in roadway construction, or a refusal. to furnish brick for such use when adverse conditions prevailed. I deem this action by the Association as an important step to the end that ultimately we may secure uniformity in construction methods, in all sections of the country in which brick are or may be used for paving purposes. Unless, however, each of our membership mutually will agree to such a condition, its enforcement or adoption by the Association can be of little or no effect or value. My judgment is that, as an Association, the only manner in which this proposition can become effective is by co-operation and education by the Association and competent engineers employed for such co-operation. No instance has come to my notice, during the past six months, of any refusal to ship to anyone, for any contract, under any specification.

However, I beg to report one incident which will demonstrate the need of definite action by individual members, with a view of remedying the evils and abuses, as practiced in sections of our country. In a city in New York State an effort was made to co-operate with the engineer, city officials and contractor on the part of a practical paving engineer, presenting a particular type of paving block, with a view of obtaining the highest type of perfection in brick roadway construction. The engineer, city officials and contractor not only refused to co-operate, but insisted on mixing the cement grout dry in a continuous mixer, spread it dry on the pavement, and then wash it into the interstices of the pavement with a hose, in the same manner you shoot leaves off your lawn. The method and application were strenuously objected to by the engineer representing the type of brick being used, when the contractor sought to substitute brick of another type for the improvement. Thus we have a new discovery in the method of applying cement grout filler, and let us hope it may not be universally adopted.

How long are we, as an organization, going to permit this attitude on the part of incompetent engineers and presumably dishonest contractors and officials? Had we not better obtain the facts in such cases and give them such publicity as will forever throttle this abuse of the people's confidence and the reckless waste of their money, regardless of fear or favor, and stand together a unit for the safeguarding of every interest, and for the protection of the material and our industry. Not for selfish gains but for the public good. I feel confident that when we shall have employed competent engineers to co-operate with officials and engineers in charge of improvements, and work with this force in the true spirit of assistance for good, we will accomplish uniformity in specifications and achieve success in the highest type of construction, all of which must,

C. C. BLAIR.
General Manager of the Bessemer Limestone Co.

however, be the work of co-operation and education and not coercion.

In my annual report of March, 1913, I called special attention to the action of the Ohio manufacturers in the adoption of several uniform clauses of contract for the sale, care, selection and payment of their product, upon which, however, no recommendations were made. After nearly two years' successful operation of this plan and with the unanimous approval of all who have adopted its use, in the sale of their product, I do most heartily recommend the adoption, by this Association, of this or some similar plan for the universal sale of brick for paving purposes, in every market, and recommend that a committee of five be appointed from the different sections of the country to draw plans for universal use of a uniform contract in its essential clauses, and authorize the same to be made effective at a given date.

What we, as manufacturers, should do is to employ, at our individual expense, or at the expense of several united in the proposition, or by the Association, several capable, competent, civil engineers, who know how to and do build properly constructed brick roadways. Then insist that, on every job we sell, our engineer shall co-operate with the municipal engineer in efforts to accomplish perfection in road building, and gentlemen, when we have solved the fool test or rattler question along these lines, you will get good work, good engineers, good contractors, and properly constructed, permanent brick roadways, and will have eliminated 75 per cent of your competition of worthless, smear, combination material used for paving purposes, and you, as well as the engineering fraternity, will have cast the rattler on the scrap heap, where it belongs so far as determining the wearing and service qualities of a paving brick are concerned.

In the suggestions or thoughts expressed in this brief report, I do not hold them infallible, but there is room for argument and an honest difference of opinion, which I accord to each of you with your individual opinions as to your concurrence with me in my views. It is, however, with this one thought in view that I have expressed my ideas to you, that ultimately the correct solution of the problems of most vital importance to our membership, the industry, the engineering forces in charge of public improvements, and the burdened, taxpaying people may obtain the greatest relief in the best results obtainable, in the best and most economical, permanent, and durable pavements, for the dollars they spend, that is possible for the skill of any man to accomplish, and, if the discussion of these questions thus raised will bring about the complete solution of the problem, then we shall all have been amply repaid for the small part and time devoted to their consideration and solution.

The undisputed fact, that as an organization we do not fix prices as a basis for the sale of our product, but that each manufacturer independent of the other, names his own prices for the sale of his paving material, has in my judgment been one of the very strongest points in the organization's dominating qualifications and has inspired the confidence of the consuming public to such a high degree that the charges frequently heard in some localities and made by these narrow minded manufacturers who have never affiliated with us or given us any support, morally or financially, are no longer taken seriously but they cast reflections on those who make them and the present day progressive citizenship is given cause for suspicion as to the merit and quality of the product of all those who are not actively engaged in promoting the interests of the association and the industry, and who are in a measure enjoying the benefits of our promotion of the use of brick, without contributing to the expense which has inspired this confidence. These fellows remind me of the chap who goes to church after the contribution plate has been passed and who defiles the minister because he does not sing his praises for generosity.

I believe, however, as an Association we should discuss our costs of production and the best methods to obtain them. This is entirely within our province and cannot but reflect benefit to our industry as a whole. The element of wages, the service as performed, its dependence and worth, are all worthy of unity of consideration and any feature that will better inform our membership on points of production will raise the standard of our product and establish the industry on a more substantial business basis, all of which will benefit the public for the greatest good.

So, then, let our commercial affairs be so conducted that the business of tomorrow will not suffer from the practices of today. We should stand shoulder to shoulder in our purpose to magnify our industry and to give to the taxpaying public, without fraud or deception, that which they so freely pay for. This should be done not in the spirit of envy, hatred or faultfinding, but in the hope that persuasive, just advice may cause us to see any error of our ways and lead us to espouse the cleanest, best and most profitable methods available for the industry in its highest achievements.

Secretary Blair's report follows:

The report of your secretary at the annual meeting which was held last March in the city of Chicago, undertook to lay before the membership of this Association the range, character and amount of work in which the Association is engaged in furthering the interest of the industry. Similar work is going on every day in increasing volume, interest and extent.

It was believed at one time that vitrified brick would be used on the entire driveway of the Ashokan Reservoir. It was subsequently determined, however, to use brick on only a portion of this work. The failure to use brick on the whole of it is traceable to the selfishness of some of our own manufacturers.

The sample vitrified brick roadway built by the Office of Public Roads was completed in May under the supervision of your secretary. In the construction of this sample, fourteen makes of brick were used. It is to be regretted that some of the brick furnished were not of a quality that should have

Interior of the Bessemer Brick Machine Room, Showing the Bonnot Represses in Operation. The Visiting Committee is Seen in the Background Viewing the Machines.

H. H. MacDONALD.
Assistant Secretary of the N. P. B. M. A.

been used in the construction of this sample and the road may not last the long number of years which is naturally expected of a properly constructed roadway of vitrified brick. Our construction is such, however, that the road will remain in condition without repair for a good number of years.

The action of the brick committee of the American Society for Testing Materials in submitting a report on the specifications for the inspection and testing of paving brick at the last annual meeting of that society, is interesting to all and copies of that report are now available and will be furnished by the Association upon request.

The announcement together with the preliminary steps now being taken toward the reconstruction of that portion of the National road from Columbus, Ohio, eastward, with vitrified brick, comes with great satisfaction. The commendation of this Association is due Governor Cox, State Highway Commissioner Marker and Director Logan Waller Page of the Office of Public Roads, for their efforts in this behalf and we believe that the general public will approve most heartily of this first real effort for the restoration of this road in keeping with the present day demands. The government in co-operation with the state will be represented in the construction of this road by James T. Voshell, an engineer of the Office of Public Roads whose qualifications for such service are unquestioned, who with the co-operative effort of State Highway Commissioner Marker it is fully believed will so construct this road that both its future use and name will greatly surpass its past history.

The Board of Directors of this Association has recommended that during the autumn and early winter this office prepare in detail and arrange a pamphlet or book, designed to include directions, recommendations and purposes to which vitrified brick are particularly adapted. It is believed the time is ripe for such an effort. It may be possible that such a book will command a price for its distribution, after its text shall have been completed. To say that it will be valuable to the user as well as serving a great promotional influence is without question, and we hope to carry this recommendation into effect at the earliest possible date.

May it not be worth while at this time to call to your attention the relative effort put forth by our leading competing materials? Some of them you are aware, in order that they may be protected at their greatest worth to the users, the material, manner and method of construction, are guarded most strenuously by patents forbidding any departure from that which is regarded of the greatest importance by its ownership. Such as are not covered by patents are covered by the relentless exactions of its proprietorship.

In each case the material is conserved at its greatest worth by the way in which it is delivered and prepared for use by the tax paying public. Every man connected with these several industries who comes in contact with the public either personally or through correspondence must know and does know with the greatest familiarity all of the necessary steps and the reasons therefor by which his material is placed for use. The reason for this personal equipment is apparent. It is their best and greatest stock in trade. The more perfect its refinement the greater its value. It is the ideal in all that draws to perfection and for the best.

Why should it not be so, for the preservation, for the popularity, for the best of our own material? Because it is fundamentally the best is no reason why it should not be surrounded by every advantage possible. A good many years ago, I took it for granted that no one would build a stone block or brick street without carefully and uniformly compressing the sand cushion upon which the stone or brick were placed so that by both uniformity in density and depth, the pavement might have a like and even support. I have been amazed to note in many places where it would be reasonable to expect that care in this respect would be taken, to find that there was neither an appreciation or ability to accomplish or information as to how such results could be wrought and of course it was not being done. Yet in one or two instances where such lack was in evidence I never have seen a like quantity of No. 1 brick being rejected for use which were of the required quality. This is but one item that bears directly and heavily against the popularity of brick streets and it is but one item. There are others. It matters not how many and what they are, for the purpose of this plea, they constantly contribute and menace our industry. Self-protection requires that a more determined, earnest and united effort be made by every one engaged in the paving brick business to raise the standard of construction so that brick streets regardless of age, use or taste surpass in every quality streets of every other kind of material whatsoever. There is nothing in the way of such accomplishment, but a united and steadfast determination by all interested in paving brick manufacture to do it. We know that it is being brought about and while it seems slow on the one hand, the instances of such large cities as Cincinnati, Baltimore and Cleveland and many smaller ones, for more perfect work in construction, is a great encouragement and I believe a spirit of healthy rivalry is about to assume its proper place instead of the selfish personal aggrandizement of persons or parties in power treating public expenditure as a private snap.

I am not one to lay at the door of the engineers or contractors the blame for lack of better manner and methods of construction, rather it is upon this Association and its members to show first a determined zeal, showing how to attain and demanding the very best. Neither will I assume that such efforts on our part will be resented by either engineers or contractors. It is only the inexperienced contractor and the engineer who fears his own ignorance from whom you may expect a lack of cordial co-operation. The great majority of engineers and contractors is both anxious and willing to gain all the information and considers all the suggestions by which their own professional skill shall be reflected in their work. We have not the dictatorial power that comes of patents nor the dogmatic command of combination or monopoly. We have only gentle influence of moral suasion and though it may be longer in process, it is more durable in time. Selling our birthright for a mess of pottage, is but a temporary relief. Constancy of effort in season and out of season, patience with energy in demonstrating each and every advantage in the construction of brick, will finally place Vitrified Brick as a paving material where it belongs. The best at least cost.

A new edition of our No. 1 Specifications containing country highway directions is now needed.

There are about seventy-five trade associations similar to ours in this country. Most of them have been formed quite recently. With a view of gaining some information that might be of advantage and assist us in our work, we recently endeavored to acquaint ourselves somewhat with their methods for their own success. We find that with wonderful unanimity their campaign is based upon two predominating ideas.

First, to establish themselves in the confidence of the public.

Second, to teach the public how to use their product. Even the biscuit maker would teach you how to eat the biscuit.

This Association has established itself in the confidence of the American public. The second and one chief aim and pur-

These two pictures by a Staff Photographer, were Taken on Thursday During the Inspection Trip of the Engineers and Other Invited Guests Over the Brick-paved Streets of Cleveland. Secretary Blair in the Left Hand Picture is Answering Questions Propounded by Interested Engineers. At the Right, Chairman Brown of the Technical Committee and E. A. Fisher of the Joint Brick Committee, are Shown Here, Mr. Brown Being in the Center and Mr. Fisher at the Right.

pose of the Association has not yet been fully accomplished. But progress is being made.

Assistant Secretary MacDonald's report follows:

Two things that keep your assistant secretary busy are:

To remind the world that the paving brick trade exists.

To remind the paving brick trade that the association exists, willing and anxious to serve its needs.

In other words, membership enlistment and general publicity are two lines of activity that require the constant attention of this office.

They are not separate enterprises, either, but closely linked, as we hope to show you. And we also wish, above all else, to point out to the individual member the part that he can play in this joint program to his own great advantage.

The association is not like a drug store or a tinner's shop where the customer is served at so much per service and the incident closed with the payment of a certain sum. This association aims primarily to serve its members, those who contribute to its funds and have a claim upon it. But, in fact, the association cannot exist and do effective work without conferring great benefit upon manufacturers who are not members and who do not contribute one cent to the success of the work.

We would not have you believe that non-members enjoy all the benefits of members. Many of the services of the association are performed at the special request of members and the benefit rather specifically restricted to those making the request. The feeling of security and confidence which this association is able to enjoy through its prestige and good repute is a benefit which non-members must forego. The pleasure, inspiration and instruction derived from such gatherings as this, is a boon for which the non-member enjoys no substitute.

Yet, if all of this enhances the repute of brick paving, it cannot fail to confer some incidental benefit upon the brick manufacturing industry at large. In the case of publicity, the benefits are almost evenly distributed between brick manufacturers, whether members or non-members.

Publicity is a broad expression, covering everything from a friendly word-of-mouth to the carefully prepared special articles which our friends of the technical press are sometimes good enough to publish. The commonest mistake is to think that publicity is a matter of hot air and word painting. The way to achieve publicity is to deserve it. I don't know any substitute for this method. If we are getting more publicity than formerly, it must be because, through the efforts of you gentlemen, the public is getting better brick highways than ever before and appreciates the fact. This brings home to us the great central purpose of our organization, to spread knowledge of correct paving methods and to issue prompt warnings against incorrect methods.

Our publicity efforts are made most effective when backed up by proper construction methods. Brick pavements laid correctly are permanent advertisements.

So, to be brief, brick roads are earning favorable publicity. This publicity can be increased as our means for doing our work increase. Two problems confront us.

How can we increase our means?

How can we confine the good effects of our publicity to those who are paying the bill?

We might content ourselves with saying that the benefits conferred upon members are worth in every case what they are costing and in many cases much more. But this does not solve the question, for this office aims not merely to be of use to its members, but to render its aid at the lowest cost consistent with the best service. This plainly cannot be done when non-members are profiting at the expense of members. There is a fundamental injustice in the situation which must be wiped out.

We certainly are not narrow minded enough to cease beneficial activity because it helps some men who are not paying for it. We do not know any magic formula whereby publicity that helps one manufacturer can be prevented from helping another in the same line of business. Blessings of this sort, like rain, fall on the just and the unjust alike.

After thinking it over, the only answer we can see is to convert the "unjust" and bring them into the fold with the "just." So here we are again, talking membership and linking it with publicity, just as we promised to do.

Your secretary and his assistant take a just pride in the growth of the association, but we cannot shut our eyes to the fact that there are at least a dozen concerns outside which ought to be on the inside. Our best efforts in the future as in the past, will be devoted to bringing them in. But this work can better be performed by a hundred men than by two men. All of you come in occasional contact with fellow brick men who are not in the association. Make it a rule to labor with them, to show them the unfairness of enjoying the fruit that others have planted. Tell them what the association has done for you.

Evangelists say that the greatest number of conversions come from experience meetings. Paint a word picture of the larger, more effective and more economical work which the association can do when every brick manufacturer helps the common cause. Each of you who brings in a convert within the coming year will be entitled to a vote of thanks and a bouquet. You can each do something, by word or letter. Do it. It is the constant force of repeated suggestion that wears away the most stubborn resistance.

The business session in direct contrast with previous conventions, occupied only an hour's time and by 10 o'clock Secretary Blair had a caravan of automobiles ready for the guests to take them on the first inspection tour of the brick-paved streets of Cleveland.

This party was chiefly composed of the invited engineers and municipal authorities and was handicapped by a lack of conveyances due to the unusual severe demand made by the Perry Centennial celebration that day.

Starting from the Hotel Statler the automobiles were guided over a selected route, Detroit Avenue to West 45th street, a cement filled brick paved thoroughfare being the first inspected. The route from there covered for several blocks some of the best drives in the city.

The first stop was made at Lake avenue and West

WILLIAM WILSON.
Chief Engineer of Canton, Ohio.

78th street where a brick-paved street was under construction. Here the engineers were given practical instruction in the way Cleveland builds its famous pavements. The engineers were interested particularly in the manner in which the cement filler was poured into the crevices between the block and later brushed in.

The remainder of the trip was over residence streets, boulevards and business thoroughfares where brick were in service in many places for nearly a quarter of a century. These pavements were the wonder of the visitors and the superior construction opened the eyes of many as to the real possibilities of the paving block.

One of the most pleasing surprises to the visitors was the use of brick on the boulevards and fine drives. It proved to be as smooth as asphalt and having durability which the other form of pavement has not, made a deep impression on those who had found objection to brick because they thought it could not be made into a seamless pavement.

Wednesday evening the annual banquet of the Association was held in the Lattice Room at the Statler. So large was the attendance two dining rooms had to be used. In one room the invited guests were placed and in the other the membership.

Secretary Blair acted as master of ceremonies and before the dinner was served introduced Mayor Baker of Cleveland whom he said was a very busy man that evening as he had to appear at several functions in his official capacity.

"We will hear from Mayor Baker and let him be on his way," said Mr. Blair, as he introduced Cleveland's chief executive.

MAYOR BAKER: I regret exceedingly that I am unable to speak to you in detail. Cleveland is very proud of herself today and I trust those from the outside are proud of her. We have been honoring the Perry victory—a demonstration which is purely local. I still have many things that I must attend to this evening in my capacity as the city's chief executive, but I was unwilling, however, to have this group of men meet in Cleveland without looking in upon you and telling you how glad we are to have you here.

Not long ago a member of the State Board of Pardons of a certain state, speaking of the Babylonian brick, said that if anybody desired to know who threw the brick, if he would come up to Cleveland and see a quiet little fellow who was generally found smoking a pipe in the mayor's office, he would perhaps throw him a brick. He did me too much honor, but I do know that the brick pavements which have been made and laid in Cuyahoga county and Cleveland are a very distinct recommendation to this community. We have heard a great deal about the matter of construction of brick pavements, but we have learned that the value of brick pavements depends upon the manner of construction more than upon the material.

But then you know more about brick pavements than I do, and as I am to address the Women's Suffrage Association this evening I must be leaving. I thank you. (Applause.)

The Mayor was given an ovation as he left the speakers table.

Printed menus indicated that the N. P. B. M. A. No. 1 Specifications were to be followed in serving the evening's repast. Immediately following the dinner, Secretary Blair arose and addressed the visitors.

SECRETARY BLAIR: Quite a number of years ago there was organized in this country a society known as the American Society of Municipal Improvements. Subsequently there was an organization for Standardizing Paving Specifications. In the history and the work of these two societies, respectively, we have seen the advance and progress of municipal engineering questions, which eventually have grown in importance for the betterment of the taxpayers' interest throughout the length and breadth of the land. During these years there have met with these societies men who are manufacturers of materials that went into municipal improvements. We have discussed ideas with them; we have advised with them; we have listened to their advice in order that we might better meet the demands made upon us. We have found in the experience and in the discussion and in the data gathered by these societies that the health of the people is conserved far more in the matter of good roads and good streets than has ever before been appreciated, and a larger economic than the mere use of streets is involved.

The manufacturers of paving brick in this country, under the organization known as the National Paving Brick Manufacturers' Association, have felt that they wanted the co-operation, the advice of these engineering societies. If you please, we were convinced that it was quite possible that a better information of the whole question could be brought about by study and inspection of the production of the material—of the use of material in a practical kind of way—arm in arm with the engineers. We have not invited our guests upon this occasion as a mere advertising proposition. We believe that we have a better and a higher motive and so you are here tonight, and we felt that it was proper that this meeting in every performance of the specifications for the function, that the man who represents these two societies as the general chairman should preside over this little meeting, and I shall ask Mr. C. C. Brown, the editor of Municipal Engineering, to take charge of this meeting. (Applause.)

MR. C. C. BROWN: Gentlemen, as Mr. Blair has said, we have been discussing for quite a number of years, and as I lay out the specifications for which we have been fighting on one side, on the other side I lay out the specifications under which we are to proceed this evening. Of course, it is rather unusual, still it has been done, to make an announcement as to what the specifications are to be, and then, sometimes, it is necessary to make a correction in the specifications. Mr. Blair has said I was chairman of both the societies. Unfortunately I have not been a municipal official for the past two years and so I am not eligible to membership in the Association for Standardarizing Paving Specifications, but I am chairman of the committee on specifications of the American Society of Municipal Improvements. We have been co-operating with the other society and the chairmen of our committees have been co-operating with the chairmen of the other committees, and so our specifications are very nearly alike.

There is one correction in the specifications which will have to be made before the bids are open for letting these contracts this evening, which are to be carried out under the specifications, and that is this: that the time limit of these contracts is placed at five minutes and no one will be permitted to speak more than five minutes, but will be called down suddenly when the five minutes are up, and I am sure the contractors will abide by these specifications. (Applause.) But to proceed under the specifications: I think I may safely assume the office of assistant engineer to see that these contracts are carried out. I have a hobby and I would like to ride it some day. Now that hobby of mine is co-operation. I have already said our societies have been co-operating in the matter of specifications, and Mr. Blair has said the manufacturers have been co-operating with these same societies in producing specifications, and I think the result is specifications that we can come pretty nearly accepting as a whole.

The brick manufacturers are learning new things, the engineers are learning new things and we are to improve them as time goes on.

The paving brick manufacturer is a little bit disposed to think that when he has sold his product that is the end of it, but I am sure that a great many of you think that is not the right view—that the product should not be out of his oversight until it has been put into the pavement right.

Now, that means co-operation between four classes of people, the manufacturer, contractor, engineer and inspector, and it is a pretty hard proposition that you are up against.

It seems to me that the manufacturer can do one thing. You have one condition, I believe, that I want to use as an example and that is the way in which my friend Mr. Dunn has gone about it. He has a corps of engineers whose business it is to follow the product and to see that the product goes into the pavement in the right way.

I believe that many manufacturers who make brick could save a lot of money in putting a man like that in the field. He should be a man who knows thoroughly all points of brick manufacture and paving construction, and he needs besides that to be a man who can handle other men. It appears to me that you can put such a man as that in the field and let him say: "I am here to help you people; our firm is in favor of this proposition, because we believe that if the brick are put into the pavement right we will get a better reputation." This will also benefit the people.

It benefits the contractor because when he gets a street well paved he does not have to look after the guarantee so much. He has laid it right and it goes through the guarantee without the necessity of any repairs. And I believe he can talk the same way to the engineers. Of course, all of us engineers do not know everything about this brick specification and brick paving, although some of us feel that we know something about the brick business ourselves; but it does seem as though anybody engaged in the manufacture of paving brick ought to be able to know something of the proper methods of street building and appreciate the benefits of following careful specifications.

I see that my five minutes are practically up and so I am going to stop, but I leave that with you as a suggestion, and I am sure that some of our friends who are going to have an opportunity to speak will voice my sentiments for closer co-operation between the manufacturer and engineer.

We will hear further from our host—the National Paving Brick Manufacturers' Association—Mr. Will P. Blair.

MR. BLAIR: Mr. Toastmaster, I am not going to add but just a word or two to what I have already said. We believe that to the extent that we are able to place in the street good paving brick to the best possible advantage, that that is the secret and that is the basis upon which must rest the popularity and the prosperity of the paving brick business of this country. We believe that will give to the taxpayers the greatest possible satisfaction. That is why we wish to solve out with you how best to construct a vitrified brick street. As manufacturers we do not claim that we know it all—that we know everything in connection with the use of our material—and that is why we have asked you to be with us and co-operate with us in this study and inspection, in order that we may be better qualified to assist you in serving the tax-paying public. (Applause.)

MR. BROWN: The next contractor is one who is so full of information that he has been overflowing for the past three days. He has been telling the brick manufacturers how to make brick, the contractors how to lay them, the engineers how to make their specifications and the inspectors how to carry them out. Now, he can't tell you all he knows in five minutes. Of course he certainly does know, because otherwise he wouldn't be the chairman of the brick committee of both the American Society of Municipal Improvement and the Association for Standardizing Paving Specifications—Mr. E. H. Christ, of Grand Rapids, Mich.

MR. CHRIST: I was given to understand that I was not to make a speech. We were to give our experiences, and as most of my experience has been with the brick people I am sure the majority do not want me to express my opinions. At least, I see a good many of them that I consider my friends, and I know there are a large number of them who would like to say—well, I won't mention it.

In all seriousness I want to say to others that I hope the National Paving Brick Manufacturers' Association will join with the American Society for Standardizing Paving Specifications in adopting their specifications. There is only one way that we can get good brick pavements, and that is by working along one line. As soon as we find out there is something wrong we can say it is in the brick. Therefore, we want every manufacturer to make a brick so he can say it is in the construction.

But a few days ago I visited a small town in which the engineer was a firm believer in the soft filler, but the people, I understand, were complaining very much about the brick not being good, and they objected very much to the brick. Therefore, I was asked to look at the brick and see what I thought of them. They looked awfully good to me. Then I went to where they were constructing a street and they were using a soft filler, and actually, gentlemen, if you could have seen how they were using it you wold go crazy. I was so mad that I went up to see the engineer and told him what I thought about it. He said, "That is my best inspector. I said, "Then fire him."

A Group of Engineers and Contractors on Canton Street, Cleveland.

I visited another town and the brick were laid beautifully. The grout was smooth, and I am a firm believer in the grout filler, but the streets were lined with culled brick. Now, I am pretty severe on the brick people myself, but I also believe that the engineer should use every brick he can that is delivered on the street, provided it is burned properly and can stand the test. In this case I would guarantee that 60 per cent of those brick were not culls and 50 per cent of those that were culls could have been put in as bats or along the curbs. "Time's up." (Applause.)

MR. BROWN: The next contractor is the most important one of this convention, the secretary of the Cleveland Chamber of Commerce, Mr. Muncon Havens.

MR. HAVENS: In selecting a man to speak on behalf of the taxpayers it seems to me that you have missed it. I observe, however, that you have given the taxpayer all the time that he is entitled to—five minutes. If I may speak to you two and a half of these five minutes it will be to say this, that there are two things the taxpayer most demands. First, he demands value received. I do think that he is interested in getting value received and you, as brick men, should give him value received. I made that remark to a group of wooden block people last week and they regarded it as a very fine saying, and I am expecting to use it with the asphalt people when they give me the chance. Then you must deal with the taxpayers openly and straight forwardly.

On behalf of the Chamber of Commerce I beg to express the hope that your convention has been a successful one and to say that we appreciate the honor that you have conferred upon us by meeting here. I thank you.

MR. BROWN: The next contractor has been a professor and we will hear from Prof. E. D. Rich, who is now the sanitary engineer of the state of Michigan.

MR. RICH: You mention the time limit, but say nothing about the penalty clause. Our legal friends tell us that a penalty clause is not valid without a bonus clause; so I shall expect a liberal reward if I sit down before my ten minutes are up.

This gathering of business men reminds me of the story of the proverbial married couple at the dinner table. The usual remark was made that, "I do wish you could make bread like Mother used to make." To which she calmy replied, "How nice it would be if you could make the dough that Father used to make." (Laughter). In my work as Sanitary Engineer we are confronted by two classes of problems. These classes merge into each other, so that there is not a very sharp line dividing them. We have the problems of sanitation and the problems of nuisances. The term, nuisance, is quite a comprehensive one and under it would include nuisances to sight, smell and hearing. I am sorry to say that many of the pavements of Michigan are nuisances in all of these respects. I am ashamed of the State of Michigan in this regard.

As you will all admit, cleanliness is the key-note of sanitation and the most sanitary pavement is the one which can be most easily and thoroughly cleaned. The method of cleaning streets by flushing, is rapidly gaining in favor and I hope to see the time when all of our street cleaning will be done in this way.

I have in mind one brick pavement in Michigan that has been in service some fifteen years and is in pretty good shape in spite of the engineer who made it. The concrete foundation is fair, but has settled in some places. The filler, if there ever was one, is now useless, but the brickmaker did his part in furnishing a brick which is wearing fairly smooth in spite of the way it was put down. This pavement is in a business center,

Some of the Engineers Watching Construction Work on West 78th St., Cleveland. Chairman Brown is in the Center of the Group at the Left.

in a city of some 15,000 persons and can be but imperfectly cleaned on account of the bad joints.

I want to speak of a diagram that has been gotten out by our Board of the State of Michigan. It is a chart showing the deaths per 100,000 population, from various diseases in the state, and is made up of lines of different colors, representing by their length, the deaths per 100,000 per year, due to seven or eight of the more common diseases. The surprising thing is that tuberculosis stands at the top of the list, closely followed by pneumonia, typhoid fever shows a much shorter line, and then comes measles, diphtheria, and scarlet fever, and last of all small-pox, with almost nothing.

This is perhaps somewhat surprising, because we find that our people, when small-pox appears in their midst, are ready to do almost anything to rid themselves of the sickness and death due to that cause. We are doing our best to protect the water supplies and thus prevent the spread of typhoid fever. The Board is using every possible effort to educate the people in regard to the prevention of tuberculosis and pneumonia.

You may not know that the germs of tuberculosis and pneumonia are carried from the sick to the well in the dust of the streets and the germs are taken in by breathing, finding lodgment in the respiratory organs. Thus we see that the suppression of dust will do more perhaps than any other thing we can accomplish in the reduction of mortality from air-borne diseases.

Street dust can only be removed by thorough cleaning. The cleaning can be thoroughly done only on a smooth pavement. We all know that brick, properly constructed with a cement filler, is as easily and effectively cleaned as any pavement there is. We also know that any pavement that has large joints is not capable of thorough cleaning and will do its part toward the spread of tuberculosis and pneumonia, so that I hope all of you will do all you can in assisting the health departments of your various cities in reaching the much desired end—clean streets. (Applause).

MR. BROWN: The next contract will be let for a country highway. I feel quite sure that it will be a brick highway. This contractor has such a reputation for arousing enthusiasm that I think he can let that amount of work in the five minutes that are given to him—Mr. Jesse Taylor, Jamestown, Ohio.

MR. TAYLOR: To a "wind jammer" of the backwoods and in the presence of a lady stenographer is an awful bad predicament. (Laughter.)

You know I come from a section of Ohio where we pile our soil up in the middle of the road about this time of the year in order to assist the automobile tourists who are attempting to tear them up. I come from the section of the state where we never saw a brick road, but while I am on my feet I want to state to you people who are manufacturers of brick that the Lincoln Memorial Highway, to be constructed from New York to San Francisco, is to be constructed of concrete, according to the great big posters that have been hung up over the country within the past few days, so you had better wake up.

If you can build a permanent highway it does seem to me that the old Columbus road ought to be constructed at the very earliest date. I have been in localities in Indiana talking on country highways where the chairman of the committees before introducing me had to take a solemn oath that I would not discuss brick, as they were in favor of gravel.

The people of Ohio, after the enormous amount of publicity and promotion which has taken place, are demanding today one hundred cents for every dollar they put in a country highway, and it does seem to me that if you people are really interested in the welfare of your business that you will give more attention in the future to following your brick out and looking over the work of the engineer and inspector and see that some brick are not laid in Ohio as some have been laid in Ohio. And it does seem to me that from a financial standpoint that you could do no better work than to do what Mr. Blair has been trying to get you to do—all of you come in and then see that you have funds sufficient to see your material go into a road, and see that you have brick roads which are the best roads in the country, and that the people receive one hundred cents for every dollar put in their highway.

You brick people who come from Pennsylvania stand by the organization in your state which stands for better highways in Pennsylvania.

You people who come here from Indiana go home and organize some sort of an association that you may have at least a highway engineer in Indiana.

You people from Illinois go home and help pull Illinois out of the mud. "Time's up." (Applause.)

MR. BROWN: I knew it would be brick. The next contractor is a member of the American Society of Municipal Improvements—Mr. E. A. Fisher, city engineer of Rochester, N. Y.

MR. FISHER: Mr. Toastmaster and gentlemen, I want to thank this association for the way in which they have given out their ideas on co-operation. I have had the same experience for a great many years, not only in pavements, but other matters. I believe that is the only way in which real success can be achieved. I am reminded in relation to the engineer of the saying of Josh Billings, "That it is a great deal better not to know so much than it is to know so many things that are not so." I think through the trip that we have permitted to take, the members of the committee on standard specifications have been and will be so greatly benefited that it will be a great benefit to the cities which they represent. So with regard to this idea of co-operation, I personally (and I believe also the other engineers connected with municipal work) will be very glad to co-operate with any member or with any officer of this association whom you may employ in your interest—that is, the interest of good brick construction.

I think I want to say in this connection what I have said a great many times before, that "I think the municipalities and the country in general are very much indebted to your secretary for the able and conscientious work that he is doing in instructing these different officials having charge of brick pavements. I know in our city we have tried to follow his instructions and specifications. While there may be some things that we fail to agree upon, we have endeavored in as far as we could to carry out the instructions which he has set out generally." I think my time is up, so that's all. (Applause.)

MR. BROWN: The list of bidders is somewhat longer than that printed and I am sure you will be very glad to hear from the man who is largely responsible for the streets that we have been over today, and I feel sure that you will be glad that you have heard him, and I would like to call on Mr. Robert Hoffman, city engineer of Cleveland, Ohio.

MR. HOFFMAN: Mr. Toastmaster and gentlemen, I believe that statements have been made that in the vicinity of Cleveland and Cuyahoga county you would find the best paved roads in the country. I believe this is true, provided you don't count the poor ones. I have read somewhere that in a certain place the streets were paved with gold, and in other places with good resolutions. I think the city of Cleveland has tried all sorts of pavements but gold and good resolutions.

It is only by co-operation, it seems to me, from three different sources that good pavements can be laid. The material must be good, the specifications must be good and the execution by the contractor must be good. I think the larger number of contractors are willing to do good work and they like to see a street paved that reflects credit on themselves. It is also up to the manufacturer, the one who sells the material, to furnish good material with which to pave the roads.

I see in this Association a great opportunity to standardize material the same way the societies are trying to standardize specifications. After the specifications are drawn I believe that the brick maker will give us a kind of brick that we do not have to submit to any kind of test. I am sure that I voice the sentiments of all the engineers of the country and that they are only too willing to co-operate with all you gentlemen in laying good pavements. (Applause.)

MR. BROWN: Cleveland is quite insistent that it is the sixth city. The next conscript is from the fourth city, at least he is President of the Board of Local Improvements of St. Louis, and we will hear from Mr. E. R. Kensey.

MR. KENSEY: Mr. Toastmaster and gentlemen, I came here with one ambition, to see much, to hear much, to learn something and to say nothing. I have seen much, heard much that was good to hear and I think I have learned something. I certainly did not expect to be called upon to say anything. I am going to tell you why I came here.

We have been using a large number of paving brick in St. Louis. We have built many miles of brick streets and they have not been a great success. Now, I am not saying the fault is with the brick. Therefore, I realize how much it is to the interest of the brick manufacturers to co-operate with the engineer in seeking not only a good material, but the proper method of using the material in the pavement, and it was for the purpose of learning all I could that I came to this meeting.

A Group of Engineers Inspecting at Close Range the Work of Constructing a New Brick Pavement on West 78th St., Cleveland. Chairman Christ of the Brick Committee is the Second Gentleman Reading from the Left. A. H. Hinkle, Commissioner of Public Works of Detroit, is at the Extreme Right.

I was accompanied by three other engineers of the street department of St. Louis and it is our intention to learn everything about brick pavements there is to learn. I believe that I can say to you that what we have seen and what we expect to see will be of material assistance to us in making some revisions in our specifications, and I believe that the result will be the rehabilitation of brick with the people of St. Louis.

MR. BROWN: We visited the West side today and found it a beautiful and well-paved portion of the city, and I am sure all would like to hear from Mr. A. E. Hyre, Secretary of the Chamber of Industry.

MR. HYRE: This is a surprise, but a pleasant one. I am glad that you have visited the West side of the city of Cleveland. Mayor Baker said in an address a few weeks ago that he did not know of any West side or East side, but that it was Cleveland. We are interested not only in the streets inside the city limits, but also in the roadways. I am very much pleased to be able to say to you that we join with our friends from the Chamber of Commerce and that we are glad to have you here; glad that you came to the West side and saw our pavements.

MR. BROWN: I feel quite sure that the next conscript can give out his contract under the specifications. I am sure you will like to hear from Professor Smith of the University of Wisconsin.

PROFESSOR SMITH: I want to express my great pleasure in being able to be with you tonight and being able to meet with you. Your secretary made a suggestion to me that in his opinion it would be a fine thing for the brick business if the universities of the country would take up some of the larger problems and work them out as far as they were able to do so.

It seems to me that this is a far-reaching suggestion and I think many of you would be surprised to see how we are equipped to handle some of these problems. The University of Wisconsin is conducting a correspondence course when any student cannot come to the university. We are attempting to do something along that line in roads and pavements, and with some success. I feel sure that in going back I shall be much refreshed and encouraged to go on with the work we are trying to do. (Applause.)

MR. BROWN: The next subject needs no introduction to most of you as he is connected with the United States Geological Survey at Pittsburgh. Mr. A. V. Bleininger.

MR. BLEININGER: The contract given me, sir, is not legal as it was awarded without a bid. It gives me great pleasure to be here this evening and I esteem it an honor to be associated with an industry which, from the economic standpoint, occupies so unique a position in the scheme of things.

You represent an industry which takes a raw material of no intrinsic value and by the expenditure of labor and fuel convert it into a commodity. This can be said of but few industrial pursuits. Our soils must be replenished by fertilization, our ore deposits may become exhausted, our lumber resources are approaching depletion, but our clay and shale deposits are so vast that they need not be included in the subject of conservation.

The real usefulness of this industry to the civilization of this country is thus far greater than we generally realize, especially when we consider that the resulting products are utilized in the construction of permanent roadways, one of the most crying needs of today.

A great deal has been said tonight about co-operation, and I may be pardoned if I say a few words in regard to the work of the Bureau of Standards and point out some of the things which are being done. The relations between your Association and the Bureau are particularly close and gratifying. The co-operation as far as our side is concerned is of a threefold character.

From the strictly engineering standpoint, the work of Mr. J. E. Howard is known to all of you. He takes the unique position that a brick pavement is a column and that by studying its deformation by exact measurements the direction in which the cumulative stresses appear most prominently may be determined, thus showing where protective measures must be taken. His strain measurements taken at high and low temperatures have proven very valuable.

The work of the Bureau deals principally with materials and their properties and for this reason we are not concerned with street and road construction, *per se*. This field is within the scope of the Office of Public Roads.

In co-operation with your Association, we have undertaken a comparative study of paving blocks as regards their wear in actual use and the rattler test. We have gone to a number of cities and have taken up sections of brick-paved streets, studying carefully all the conditions of construction and shipping the blocks, thus removed, to our Pittsburg Laboratory. In this manner both good, indifferent and bad streets have been examined and studied.

A third line of co-operation consists in the help we find we can give many plants in regard to manufacturing troubles, and by the technical study of the raw materials available for paving brick manufacture.

Several of our publications deal with the question of vitrification and burning. Incidentally it might be mentioned that many clay and shale samples are sent us with the information that the material is "undoubtedly adapted to the manufacture of paving brick." Very frequently, we are compelled to reply that "undoubtedly the sample is not suited for the purpose mentioned." It seems to be an opinion only too common that any kind of shale or even clay can be made to produce paving block, an illusion which we are making every effort to destroy. I thank you for your attention.

MR. BROWN: We have a good many engineering contracts these days and the next subject is one who is a public contractor and who is connected with the office of Public Roads, Mr. Voshell.

MR. VOSHELL: A little while ago I said I would like to see the National Road built. A little more than a year ago $500,000 was appropriated by the Office of Public Roads to determine the value of good roads. As all of you know that was first offered to all the states, that is $10,000 each. Inasmuch as the states did not want the $10,000 it was decided to make the amount larger and $120,000 was set aside to build a post road in Ohio. The particular road that has been selected is the National Road running from Zanesville toward Columbus and I have been sent here to represent the government in the building of that section. It practically has been determined that it will be a brick road and I trust that when I get brick on that road that I will get the kind of brick that ought to go into that road.

I am perfectly willing to co-operate with the brick manufacturer in securing a good road. We asked members of the National Paving Brick Manufacturers Association to give some brick for an experimental road at Washington. They were kind enough to do so, but some of the brick that were sent there gave a rattler test of 38 per cent. I trust you won't furnish me any brick of that kind for the National Road, but that you will see that we are furnished good material. I thank you gentlemen. (Applause.)

MR. BROWN: The next contractor is Mr. T. A. Randall, editor of the "Clayworker" of Indianapolis, Ind.

MR. RANDALL: This is a great surprise. The only intimation most of us had is the fact that we were put up here at the speakers' table.

I am reminded of the story of the little fellow whose mother sent him to church alone for the first time one Sunday morning. She was quite proud of the fact that he was old enough to go to church alone, and upon his return she met him at the gate and asked the child what the text was and he said, 'Don't get scared your quilt is coming.' The mother was greatly puzzled and wondered what the minister had chosen for his text. She puzzled over the matter for several days and finally one day when she met the minister she asked him what he had chosen for his text on that particular Sunday.

After a few minutes the minister remembered that his text ran as follows: "Fear not for I will send you the Comforter." (Laughter.)

I believe the engineers and municipal officers who are here tonight will bring comfort to the paving brick manufacturers. I have always believed that the rattler tests were too high, and I believe an injustice was done some thereby. I have also believed there was more injustice done in poor construction than poor brick. There was a time when the brick manufacturer said: "To hell with the engineer and inspector; if I can get my brick sold that is all I care about." But that isn't so today. I thank you gentlemen. (Applause.)

MR. BROWN: We haven't had any partners in any of these contracts that have been let tonight, but there are two members in this room from Chicago, so I am afraid to let them loose. I am going to call on one of the bidders and if he wants to give up a part of his five minutes to the other he can do so, and if not all right. I will call on Mr. C. L. Rorick, Business Manager of "Brick and Clay Record" and Mr. Iverson C. Wells, its editor.

MR. RORICK—I have a faint suspicion that most of you feel like a certain well-known Chicago club man, who, after being out rather late one might looking after a sick friend, entered the hall way of his home in the uncertain, dim light of a single flickering gas jet. There was a small baby carriage left standing in the center of the hall by some careless servant and he stumbled over it. Rubbing his bruised shins he looked up in surprise and said: "I wonder how that darn Ford car got in here!"

Now, being a single-cylinder orator I feel in justice to you that I retire in favor of some of the high-powered, six cylindered Packards and Pierce Arrows whom I am sure you would prefer to hear talk. Mr. Wells, our editor, I am sure, has something to say to you.

MR. WELLS: I feel that Mr. Rorick did a gross injustice to me when he refused to use up that five minutes. Now, I am not an orator, but I recall two days spent with Secretary Blair as his guest on inspection trips with some of you engineers and if you gentlemen are not more severe on me than your co-laborer was on one inspector we met in one of the towns I think I can get under the wire.

The question of inspection and construction seems to be the one subject with us this evening. I am also of the belief that it is not a question of manufacture, but a matter of proper construction and proper inspection. I would like to cite one instance that I noticed yesterday. Our party was looking at a job of new construction work down the state. The brick were all in and the inspector was on the job culling them. Both sides of the street resembled a mound of burned clay. When I first came upon the job I thought it was new brick delivered for a new job somewhere and wondered. Inquiry developed the fact that these were culls. Some of the party expressed surprise because we had just left the plant where the most careful inspection was observed.

Several members of the committee picked up some blocks among those culled, and Mr. Christ, who is said to carry the largest hammer in the world, was on the job. After examining several of the blocks he said that they were as fine as any brick he had ever seen. I doubt if there were any brick in the street that were any better.

Someone said that they would like to see the inspector and the contractor took us over to the inspector. It seemed to be his sole job to pull them out. One of the members of the committee handed him a brick and asked him why he threw it out. He said it was because it was too soft.

The engineers looked at the fellow and then at the brick. Without another word they turned away.

Later, in discussing the incident with Mr. Christ and Mr. Cellarius, these gentlemen pronounced the brick examined as perfect and they certainly know a good brick.

This particular inspector had about as much business being in the position he was as he had trying to run the United States government. He was low in mentality and could not have passed the examination for a water carrier on a canal job if civil service rules were enforced.

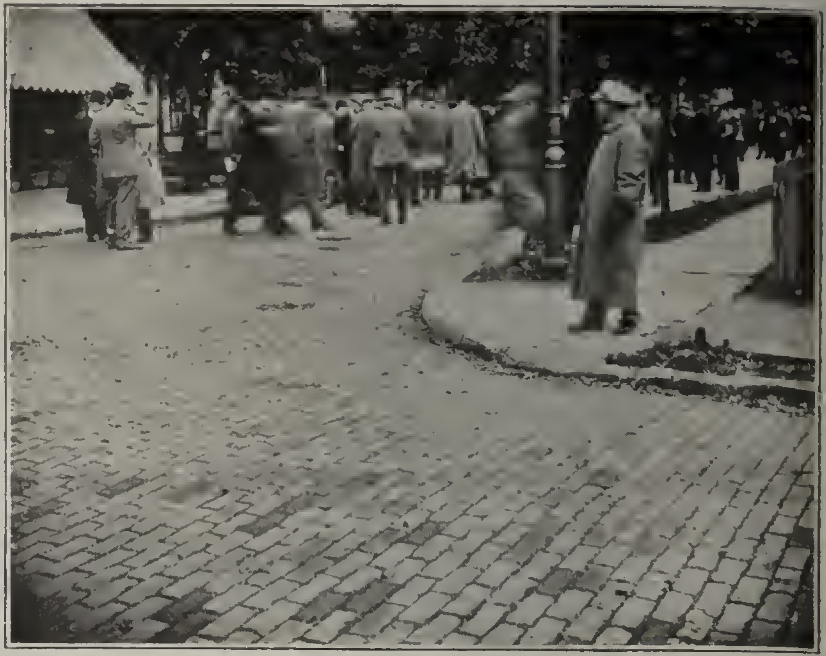
Yet, here he was in full authority over a piece of improvement which the contractor told me cost the people $15,500.

Further inquiry disclosed the fact that this same man had inspected $175,000 worth of brick paving for this same contractor this season!

Do you think for a minute that any of the big business institutions of this city or any other city would let this man take charge of $175,000 worth of work and pass judgment on it? Hardly. I doubt if he would qualify on a peanut stand. I thank you.

MR. BROWN: Some of the contractors are absent, but I am sure we have a man here who will be able to fill all these contracts and give us a good time. Mr. W. H. Hunt, the former President of the Chamber of Commerce of Cleveland.

MR. HUNT: I wish first of all to correct a statement just made, to the effect that I was once President of the Cleveland Chamber of Commerce. I have never had the honor, but I did have the honor, which I regard even greater, of serving as president of the National Brick Manufacturers Association when the organization was quite young. I remember my good friends, Mr. Blair, and others attending the meeting of the National Brick Manufacturers Association at that time and I recall that the Association's efforts throughout this country were received more or less skeptically.



Intersection of Canton and E. 74th Streets. Canton Street is Shown in Foreground. It was Laid in 1905 with No Foundation Base and with Asphaltum Filler Supplied by its Makers. E. 74th Street, where the Crowd is Congregated, was Built at the Same Time and by the Same Contractor Who Used the Same Make of Brick. It is in a Much Better Condition and Has a Cement Filler.

But the brick industry grew in its prominence and importance and in due time its branch was created—the National Paving Brick Manufacturers Association. That was a year or two following 1900 and I remember a statement made to me by Mr. Blair that "no matter how perfect the product was made, the success of the paving brick manufacturer rested more largely upon co-operation with the engineers than from any other cause."

I came down to this meeting on the invitation of my friend, Mr. Randall, and I find that the statement that Mr. Blair made to me at that time has been fully realized.

MR. BROWN: We have heard from members of the American Society of Municipal Improvements and from the members of the other societies, but we have with us the whole thing of the Association for Standardizing Paving Specifications—its President—Mr. Sprague, City Engineer of Pittsburgh.

MR. SPRAGUE: It seems to me that there is nobody immune here tonight, and you are calling upon everybody for speeches.

It seems to me that it is a great field and a great opportunity for the brick manufacturers of this Association. There is a very strong sentiment throughout the country today for the building of highways, but the financing of these highways deserves the very serious consideration of the taxpayers. The bonds proposed to be submitted to the people of Pennsylvania for a referendum vote call for $50,000,000 for roads. Now, in my opinion, with many of these so-called bituminous roads

One Section of the Caravan of 49 Autos Used in the Inspection Trip.

—the life of them is not over 12 years, the bonds run for a number of years longer so that before the bonds are due the road is gone. I believe if these roads are to be built they should be built of brick. It seems to me the proper thing to do is to put in a permanent road and not build so many roads.

MR. BROWN: Last spring 1 had the pleasure of visiting St. Louis about the time the new administration was taking office. I did not have the pleasure at that time of meeting all of the officials personally, but we have with us tonight Mr. C. M. Talbert of the City of St. Louis.

MR. TALBERT: A trip here has been well worth while for two or three reasons. Mr. Kensey has explained very well our interest in the brick proposition, but aside from that it has been gratifying to find what a fine class of people the brick people are. Some day I hope when the engineers give a banquet we will hear some nice things about the engineers and some bad things about the manufacturers.

One thing I heard from the government man—he says it is possible to make a poor brick. I had begun to think it couldn't be done. (Laughter.)

We have some very bad pavements in St. Louis. We have tried to cover these block with asphalt—something to get back the wearing surface of the brick, when it is almost beyond the point of traffic use.

The Mayor of the city said, "I consider that one of the problems" and I say it is a serious problem and that is what brought such a large representation of the City of St. Louis to this convention. It has really been worth while. I am not quite ready to say it is all in the engineer, but I am ready to say it is partly. You have better brick streets here than I had realized could be put down and used under the traffic conditions of the city. I thank you. (Applause.)

MR. BROWN: We had such good luck in having our contract let to the Chicago gentlemen, that I want to call on another gentleman, Mr. J. G. Gableman, Assistant Chief Engineer of Streets.

MR. GABLEMAN: I think the chairman took a rather hard rap at the Chicago men. I made several tests today, the first one in company with your members—the absorption test—(laughter). After that we went down to see the parade, got caught in the jam and got repressed. In crossing one of the streets in front of an automobile I came nearly getting the transverse test. As for the rattler test in going over the streets they were so smooth this morning we didn't lose much; as for the filler, the gentleman that was with me said I was well-filled. (Laughter and Applause.) But seriously speaking I have learned a good deal. I believe that grout filler is the solution of brick pavements. We have not used much grout filler in Chicago, but that is not due to the fact that asphalt is superior to grout, but is due to the fact that we have to tear up our streets often because our city is growing so fast it is hard to tear up our streets properly in a short time. I have seen some very fine streets this morning and I believe you have the solution, and I hope some day Chicago will adopt the grout filler when she stops growing so fast. I want to say that I have had a very pleasant visit here and that it was a very instructive and profitable one. I thank you.

MR. BROWN: The next contract is let to Mr. A. H. Hinkle of the State Highway Department of the State of Ohio.

MR. HINKLE: I did not get to take the trip with you this morning, but hope to be with you tomorrow morning and expect to be able to talk with you on what we have seen in this county. I think the back door is open so I am going to slip out and give somebody else a chance.

MR. BROWN: Gentlemen, I am sure that you have noticed that all of the speakers have been the guests of the National Paving Brick Manufacturers Association. I want to express through the guests who have spoken and other guests the sincere thanks to this Association for the courtesies which have been shown us. I know you will want to hear a word from the president of the Association before we leave, Mr. Chas. J. Deckman.

MR. DECKMAN: I am sure that we are all to be congratulated upon the fact that you have acted the part of gentlemen and have sat here to listen to the speakers. I believe that you have all come here with one purpose in view and that is to be benefited and to benefit the locality you represent.

I want to thank the engineers of the country who have given us their attendance. We certainly appreciate it. I also want to thank the city officials who have come here to co-operate with us, to learn how to best build brick roads. I want to express the thanks of the Association to the trade journals. It is to you we owe the splendid publicity we have received during the rise of the Association. To our friends the manufacturers of clay machinery who have freely contributed to a fund to help in the expenses incurred in your entertainment I also desire to express the thanks of the Association. Now I have nothing further to offer, but I trust that at our next annual convention we may have the pleasure of seeing all of of you again and many more. I thank you. (Applause).

Thursday morning half a hundred automobiles were brought into service under the direct charge of Spencer Duty of the Deckman-Duty Paving Brick Company. Mr. Duty had evolved a system of controls that worked perfectly and there was not a hitch the entire day. This feature of the inspection trip, which covered the greater part of the day and practically all the boulevards and streets of the city as well as the famous brick highways of Cuyahoga county, was remarked upon by many as being one of the best handled caravans in the recollection of those participating.

A Group of Interested Guests of the N. P. B. M. A. Caught by a Staff Photographer on One of Cleveland's Streets.

The first street inspected, Euclid Avenue, is built of stone with tar filler. Other streets with the same material but with cement filler—the method of construction urged upon by the N. P. B. M. A., were driven over to show the contrast.

The tour of the city took in brick, asphalt, macadam and concrete streets alike, but it must be said to the credit of Cleveland that few of the latter were to be seen.

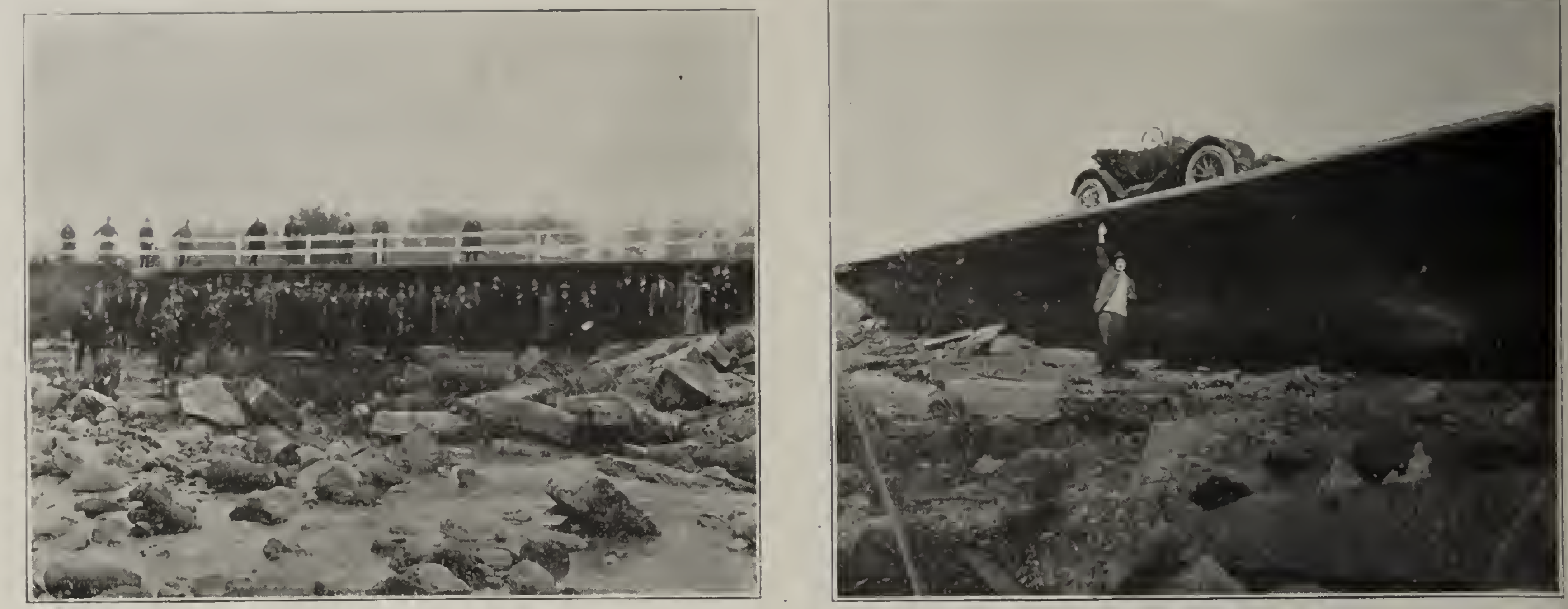
Some of the streets passed over were laid of brick as far back as quarter of a century ago and were in a remarkably good condition.

One of the most interesting points at which the cars stopped for closer inspection was at Canton and E. 72nd streets. The accompanying photographs show the engineers deeply interested in the talk Secretary Blair gave them on the two forms of construction shown at this point. Canton street was laid in 1905 without a foundation base. An asphaltum filler applied by its manufacturers was used. The intersecting street, 72nd, was built at the same time, by the same contractor and out of the same brick, with the exception that cement filler was used.

Despite the fact that 72nd street was laid eight years ago it is in perfect condition and looks good to wear at least fifty years longer. Canton street, however, while a good street, already shows wear, because the soft filler has not protected the block and they have chipped to some extent.

Worley street was the next stop. New construction work was shown here and the engineers had a practical instruction in the manner in which Cleveland builds its famous brick pavements.

The auto tour was resumed and after covering several other brick streets the pilot car guided the caravan out into the country over some of Cuyahoga County's famous highways. The route was over Warner road and thence



A Section of Brick Pavement on Dunham Road at Tinker's Creek, near Cleveland, Where Creek Overflowed Last Spring and Washed Out the Foundation, Leaving a Cave 80 ft. Long, 10 ft. High and 8 ft. Deep. This Has Remained Until Now Unsupported, being Strong Enough to Carry an Automobile. In One Picture is Shown the Visiting Engineers Inspecting the Solidity of Brick with Cement Filler and in the Other the Pavement Bearing an Automobile.

to Turney road, a cement-filled road, concrete base, laid in 1905. Thence over Fisher road which was laid in 1908. This road has a four-inch base of concrete with cement filler.

The next stop was on Dunham road, at Tinker's Creek, where a washout in the early spring floods left rather an unusual situation in the brick pavement. The concrete base was washed out, leaving the brick pavement unsupported. The washout is 80 feet long, 10 feet high, and 8 feet deep. This pavement, shown in accompanying pictures, has remained unsupported all the Summer and bears the weight of automobiles that pass over it.

Photographs were taken here of the engineers and other guests and the party started back toward the city, stopping at The Gentlemen's Racing Club for lunch. After lunch the tour of the city streets and boulevard system was resumed. The last street vsited was Lexington avenue to East 55th street. This has a six-inch concrete base and either is the first or one of the first brick pavements laid in Cleveland on a concrete base. The street car line originally was a cable line and the thoroughfare repeatedly has been torn up and rebuilt. Taking into consideration the abuse it has had it is a remarkable street.

A portion of the party left the main tour at University Circle and, accompanied by Spencer Duty of the Deckman-Duty Co., and F. B. Dunn, of the Dunn Wire-Cut-Lug Block Company, visited the Deckman-Duty plant to see the Dunn block made. This proved one of the interesting features of the day as most of the leading engineers of the country have indorsed the Dunn block and this was the first opportunity for some of them to see them actually made.

With the close of the inspection tour that afternoon the tenth annual convention adjourned.

The official registration of the convention follows:

Will P. Blair, Secy., N. P. B. M. A., Cleveland, O.
H. H. Macdonald, Asst. Secy., N. P. B. M. A., Cleveland, O.
R. L. Lewis, Wassall Brick Co., Glouster, O.
P. F. Jandernal, Lehigh Portland Cement Co., Cleveland, O.
Chas. J. Deckman, Pres., National Pav. Brick Mfrs. Assn., Cleveland, O.
J. R. Roland, Bessemer Limestone Co., Youngstown, O.
F. R. Kanengeiser, Bessemer Limestone Co., Youngstown, O.
J. G. Barbour, Metropolitan Pav. B. Co., Canton, O.
E. H. Christ, Am. Soc. Municipal Impts., Grand Rapids, Mich.
Theo. A. Randall, Editor "Clay Worker," Indianapolis, Ind.
C. L. Rorick, "Brick & Clay Record," Chicago, Ill.
Iverson C. Wells, Editor "Brick & Clay Record," Chicago, Ill.
A. G. Aubrey, Bessemer Limestone Co., Youngstown, O.
N. S. Sprague, Supt. B. of C., Pittsburgh, Pa.
Chas. M. Crook, Tidewater Paving Brick Co., Catskill, N. Y.
H. S. Renkert, Metropolitan Pav. B. Co., Canton, O.
A. V. Bleininger, U. S. Bureau of Standards, Pittsburgh, Pa.
F. M. Randall, City Engineer, Ft. Wayne, Ind.
Chas. Latshaw, City Engineer, Fostoria, O.
F. B. Morris, Metropolitan Pav. B. Co., Canton, O.
L. A. Culver, Wabash Clay Co., Veedersburg, Ind.
Harvey C. Adams, Danville Brick Co., Danville, Ill.
E. A. Fisher, City Engineer, Rochester, N. Y.
J. R. Tanner, Res. Engineer State Highways, Zanesville, O.
E. B. Schmidt, Asst. City Engineer, Louisville, Ky.
C. W. Denniston, Deckman Duty Brick Co., Rochester, N. Y.
John W. Hall, Westport Pav. Brick Co., Baltimore, Md.
D. H. Padgett, Westport Pav. Brick Co., Baltimore, Md.
Stanley D. Knight, Ohio Quarries Co., Cleveland, O.
W. N. Alderman, Athens Brick Co., Athens, O.
C. C. Blair, Bessemer Limestone Co., Youngstown, O.
F. M. Brewer, City Engineer, Niles, O.
William Wilson, Civil Engineer, Youngstown, O.
A. L. Curry, Metropolitan Pav. Brick Co., Canton, O.
G. H. Crayton, City Engineer, Lima, O.
H. G. Norman, Contractor, Canal Dover, O.
J. D. T. Bold, Contractor, Canal Dover, O.
Geo. E. Arnold, Civil Engineer, New Philadelphia, O.
H. P. Fribley, Dir. Public Service, New Philadelphia, O.
John B. Frease, Borough Engineer, Wilkinsburg, Pa.
J. B. Nicholson, Toronto Fire Clay Co., Toronto, O.
W. H. Gifford, Cleveland Bldrs. Supply Co., Cleveland, O.
T. A. Giberson, Cleveland Stone Co., Cleveland, O.
B. F. Deardorff, City Engineer, Muncie, Ind.
F. C. Keuthan, City Engineer, St. Marys, O.
L. A. Boulay, Smith & Boulay Co., Toledo, O.
Chas. H. Moore, Borough Solicitor, Blairsville, Pa.
Harry D. Williar, Jr., Pav. Commissioner, Baltimore, Md.
R. F. Cooksey, Pav. Commissioner, Baltimore, Md.
Edgar J. Buttenheim, Editor "American City," New York City.
Milton G. Miller, Councilman, Blairsville, Pa.
W. C. Lukehart, Councilman, Blairsville, Pa.
H. G. Meiners, City Engineer, Covington, Ky.
F. L. Manning, Peebles Pav. Brick Co., Portsmouth, O.
J. B. Hammond, Jos. Soisson Fire Brick Co., Bolivar, Pa.
R. R. Soisson, Jos. Soisson Fire Brick Co., Connellsville, Pa.
Phil. H. Webber, Civil Engineer, Canton, O.
Leroy Springer, Contractor, New Philadelphia, O.
Ed. Stingel, County Engineer, New Philadelphia, O.
John C. McAvoy, McAvoy Brick Co., Philadelphia, Pa.
W. D. Uhler, Bureau of Highways, Philadelphia, Pa.
Professor Leonard C. Smith, University of Wisconsin, Madison, Wis.
B. E. Place, E. M. Frease Co., Galion, O.
H. H. Frease, E. M. Frease Co., Galion, O.
James T. Voshell, Office of Pub. Roads, Washington, D. C.
M. A. Stewart, Asst. Engineer, Toronto, Ont.
Harry Beitt, Cleveland, O.
O. N. Townsend, T. B. Townsend Brick & Cont., Zanesville, O.
Harry Baker, "Engineering News," New York City.
W. M. Hansen, Paving Brick Pub. Bureau, Chicago, Ill.
Earnest Ashton, Lehigh Portland Cement Co., Chicago, Ill.
Julius G. Gabelman, Asst. Chief Engr. of Streets, Chicago, Ill.
E. J. Mehren, Editor "Engineering Record," New York City.
Chas. C. Brown, Editor "Municipal Engineering," Indianapolis, Ind.
Marion W. Blair, Kushequa Brick Co., Kushequa, Pa.
P. B. Bland, Michigan Roads and Forests, Detroit, Mich.
Richard Post, Contractor and Builder, Detroit, Mich.
Geo. H. Clipper, Geo. H. Clipper Co., Detroit, Mich.
F. Salmen, Salmen Brick Co., New Orleans, La.
James E. Ford, Metropolitan Pav. Brick Co., Ft. Wayne, Ind.
J. W. Robb, Clinton Pav. Brick Co., Clinton, Ind.
J. A. Boos, Engineer, Hillsdale, Ind.
Walter G. Fishering, Metropolitan Pav. Brick Co., Ft. Wayne, Ind.
J. W. White, County Engineer, Monroe, Mich.
J. W. Lentz, Co. Highway Commissioner, Monroe, Mich.
Frank Schrauder, Co. Highway Commissioner, Monroe, Mich.
C. G. Norris, Carlyle Pav. Brick Co., Portsmouth, O.
C. P. Mayer, C. P. Mayer Brick Co., Bridgeville, Pa.
James C. Haring, Borough, Engineer, Crafton, Pa.
Anderson Dana, Tidewater Pav. Brick Co., New York City.
Chas. H. Frank, Athens Brick Co., Nelsonville Br. Co., Columbus, O.
R. P. Mannix, City Engineer, Greenville, O.
John C. Hiteshew, City Engineer, Carlisle, Pa.
German Warner, Surveyor, Greenville, O.
Arthur W. Wrightmets, City Engineer, Newcastle, Ind.

Fritz Reich, Supt. of Paving, Cleveland, O.
J. B. Wilcox, Alliance Clay Prod. Co., Alliance, O.
C. F. Rieley, Rieley Bros., Contractors, Cleveland, O.
Robt. L. Beck, Bessemer Limestone Co., Cleveland, O.
Wm. Schoonover, County Engineer, Plymouth, Ind.
F. J. Cellarius, Consulting Engineer, Dayton, O.
Eb. Rogers, Alton Brick Co., Alton, Ill.
R. L. Murnaugh, Alton Brick Co., St. Louis, Mo.
E. R. Kensey, Pres. Board of Local Im., St. Louis, Mo.
C. M. Talbert, Street Commissioner, St. Louis, Mo.
H. R. Abrams, Supt. Streets, St. Louis, Mo.
M. Schuyler, Chief Testing Dept., St. Louis, Mo.
John Schwaab, City Engineer, Alton, Ill.
Wm. Harris, Chief Inspector Streets, St. Louis, Mo.
Frank Aschmeyer, Hydraulic Pav. Co., St. Louis, Mo.
J. C. Siegel, Hydraulic Pav. Co., St. Louis, Mo.
F. M. Lillie, City Engineer, Youngstown, O.
F. S. Parkhurst, City Engineer, Niagara Falls, N. Y.
G. S. Black, Cleveland Engineering Society, Cleveland, O.
F. T. Townsend, Dunn Wire-Cut-Lug Brick Co., Buffalo, N. Y.
G. B. Herring, Contractor, Mansfield, O.
B. M. French, Civil Engineer, Salem, O.
S. A. King, Civil Engineer, Youngstown, O.
C. D. O'Callaghan, Civil Engineer, Joliet, Ill.
E. B. Pflueger, City Engineer, Circleville, O.
W. H. Eagle, Asst. City Engineer, Columbus, O.
J. L. Murphy, Hocking Valley Brick Co., Nelsonville, O.
Chas. W. Raymond, C. W. Raymond Co., Dayton, O.
W. F. Schickler, City Engineer, Oberlin, O.
W. C. Taylor, Sharon Clay Prod. Co., Sharon, Pa.
L. W. Penfield, Am. Clay Machinery Co., Willoughby, Ohio.
A. W. Aylesworth, The Bonnot Co., Canton, O.
H. O. Core, Civil Engineer, Delaware, O.
J. M. Hoskins, Terre Haute Vit. Brick Co., Terre Haute, Ind.
J. W. Hunter. Road-Maker, Des Moines, Ia.
A. R. Root, Chambers Bros. Co., Philadelphia, Pa.
O. W. Holl, County Surveyor, Canton, O.
Geo. H. Fenkell, Com. of Pub. Works, Detroit, Mich.
Bert C. Smith, City Engineer, Warren, O.
E. P. Foster, Bessemer Limestone Co., Youngstown, O.
F. D. Burd, Contractor, Canton, O.
G. F. Atkins, Cleveland Stone Co., Cleveland, O.
C. C. Barr, Barr Clay Co., Streator, Ill.
F. W. Lucke, F. W. Lucke Co., Chicago, Ill.
O. H. Judson, Barrett Mfg. Co., Cleveland, O.
D. D. Deeds, Thew Automatic Shovel Co., Lorain, O.
B. F. Thomas, Sterling Brick Co., Olean, N. Y.
F. L. Stowell, Sterling Brick Co., Olean, N. Y.
F. E. Tyler, Allegheny Valley Brick Co., Olean, N. Y.
F. H. Snyder, United Brick Co., Rochester, N. Y.
G. H. Francis, United Brick Co., Greensburg, Pa.
R. V. Haynes, Ohio Quarries Co., Toledo, O.
J. P. Newman, "Engineering News," Cleveland, O.
N. L. Strong, Attorney-at-Law, Brookville, Pa.
N. C. Ralph, Ashtabula Shale Brick Co., Ashtabula, O.
F. B. Dunn, Dunn Wire-Cut-Lug Brick Co., Conneaut, O.
Ed. W. Dow, American Clay Machinery Co., Bucyrus, O.
R. L. Greenslade, Contractor, Bellevue, O.
A. B. Lea, Civic Engineer, Cleveland, O.
M. E. Springer, Engineer, Chicago, Ill.
W. R. Barnhart, Jr., Wooster Shale Brick Co., Wooster, O.
F. F. Bentley, Ohio Galvanizing & Mfg. Co., Warren, O.
J. C. Bentley, Ohio Galvanizing & Mfg. Co., Niles, O.
C. O. Malone, Cleveland Stone Co., Cleveland, O.
Barry Dudley, Massillon, O.
A. E. Hyre, Secy. Chamber of Industry, Cleveland, O.
H. M. McIlwain, Canvas Belting Co., Cleveland, O.
J. R. Zmunt, Newburgh Brick & Clay Co., Cleveland, O.
Philip Raimer, Newburgh Brick & Clay Co., Bedford, O.
D. R. Potter, Thornton Fire Brick Co., Clarksburg, W. Va.
H. W. Rodgers, Cleveland Stone Co., Pittsburgh, Pa.
H. J. Conover, Central Press Assn., Cleveland, O.
W. F. Eirick, Euclid Brick Co., Cleveland, O.
John Laylin, City Engineer, Norwalk, O.
Wm. G. Muse, County Commissioner, West Newton, Pa.
T. P. Kellogg, Contractor, Norwalk, O.
W. H. Gibb, Brown Inst. Company, Pyrom., Pittsburgh, Pa.
E. A. Merkel, City Engineer, Mansfield, O.
R. L. Queisser, Secy. Ohio Face Brick Mfrs. Assn., Cleveland, O.
W. R. Glasgow, Civil Engineer, Shiloh, O.
G. C. French, Big Four Clay Co., Canton, O.
H. H. Fogerty, "Engineering & Contracting," Chicago, Ill.
H. G. Herring, Contractor, Cleveland, O.
W. J. Whitworth, Bessemer Limestone Co., Youngstown, O.
Geo. H. McGinness, Civil Engineer, McKees Rocks, Pa.
H. R. Wiley, City Clerk, Blairsville, Pa.
F. M. Smith, Councilman, Blairsville, Pa.
W. A. White, Big Four Clay Co., Canton, O.
A. B. Luten, Metropolitan Pav. Brick Co., Toledo, O.
G. C. Berkey, Contractor, Elkhart, Ind.
C. J. P. Lucas, Commercial Car Journal, Philadelphia, Pa.
Ed. A. Roberts, Builders' Exchange, Cleveland, O.
J. W. Haines, Contractor, Alliance, O.
J. W. Sexton, Supt. of Streets, Buckhannon, W. Va.
Geo. Seifers, Borough Engineer, North Braddock, Pa.
Ed. McCrady, Contractor, Pittsburgh, Pa.
Geo. J. Schwarz, Ricketson & Schwarz, Milwaukee, Wis.
P. H. Connelly, City Engineer, Racine, Wis.
W. E. Sarver, City Engineer, Canton, O.
J. A. Starrett, City Engineer, Canton, O.
C. H. Knight, Engineer, Canton, O.
Robt. Hoffman, City Engineer, Cleveland, O.
F. M. Brady, Cleveland Brick & Clay Co., Cleveland, O.
T. D. Harmon, "Stockman & Farmer," Chicago, Ill.
J. R. Griffiths, Deckman-Duty Brick Co., Cleveland, O.
C. G. Deckman, Deckman-Duty Brick Co., Cleveland, O.
James McCleary, Contractor, Cleveland, O.
Geo. Brechbill, County Commissioner, Greensburg, Pa.
J. W. Shields, County Engineer, Greensburg, Pa.
C. M. Theobold, City Engineer, Elyria, O.
W. D. Reamer, County Commissioner, Greensburg, Pa.
R. C. Rhinehart, Contractor, E. Liverpool, O.
L. A. Amsden, City Engineer, Ashtabula, O.
A. H. Hinkle, State Highway Dept., Columbus, O.
W. T. Blackburn, Dunn Wire-Cut-Lug Brick Co., Paris, Ill.
C. R. Whiteman, City Engineer's Office, Columbus, O.
R. S. Fendrick, "Dispatch," Pittsburgh, Pa.
John Porter, Newell, W. Va.
L. Warstten, Louisville Machine Co., Louisville, O.
J. M. Smith, Louisville Machine Co., Louisville, O.
R. J. McKenzie, Ex. County Commissioner, South Newburgh, O.
D. E. Humphrey, Deckman-Duty Brick Co., Cleveland, O.
R. H. Boynton, City Engineer, Frankfort, Ind.
H. L. Powell, "Good Roads," New York City.
H. C. Moatz, Deckman-Duty Brick Co., Cleveland, O.
A. L. Metheany, Engineer and Contractor, Lima, O.
F. B. Gilchrest, Civil Engineer, Canton, O.
Tom. P. Brown, City Civil Engineer, Wooster, O.
J. A. Gehres, City Civil Engineer, Akron, O.
Ralph Touzeau, Ohio Ceramic Eng. Co., Cleveland, O.
Chas. Lang, Ohio Ceramic Engr. Co., Cleveland, O.
O. K. West, Main Belting Co., Columbus, O.
W. C. Schreiner, Main Belting Co., Pittsburgh, Pa.
D. L. Wadsworth, Ohio Ceramic Engr. Co., Cleveland, O.
B. A. Bennet, Contractor, Conneaut, O.
Edw. L. Middleton, Barr Clay Co., Streator, Ill.
C. T. Blosser, County Surveyor, Wooster, O.
Geo. A. Olsen, Dealers' Bldg. Material Record, Chicago, Ill.
W. G. Thomas, Dealers' Bldg. Material Record, Detroit, Mich.
E. S. Smith, County Engineer, Youngstown, O.
Henry Boynton, Cleveland, O.
F. M. Williams, Chief Engineer, Ravenna, O.
C. E. Foster, Foster Pav. Block Co., Bradford, Pa.
E. C. Carr, Jr., Wooster Shale Brick Co., Wooster, O.
I. H. Crane, Proctor & Collier Co., Cincinnati, O.
Professor F. H. Eno, Ohio State University, Columbus, O.
W. A. Meddick, Ohio Ceramic Engr. Co., Cleveland, O.
John F. Cunningham, Editor "Ohio Farmer," Cleveland, O.
M. M. Morrow, Hocking Valley Brick Co., Columbus, O.
C. M. Edwards, Engineer, Niagara Falls, N. Y.
D. R. Sharp, Secy., Portage County Imp. Assn., Ravenna, O.
Ellis Lovejoy, Lovejoy Engineering Co., Columbus, O.
Oliver R. Rieley, Contractor, Cleveland, O.
J. L. Higley, Cleveland Brick & Clay Co., Cleveland, O.
Jesse Taylor, President, Ohio Good Roads Federation, Jamestown, O.
Henry D. Saunders, Com. Chamber of Commerce, Buffalo, N. Y.
F. Lawson Moores, Harris Brick Co., Cincinnati, O.
F. L. Hopley, Am. Clay Machinery Co., Chicago, Ill.
Davis Brown, Am. Clay Machinery Co., Bucyrus, O.
L. Haigh, Am. Clay Machinery Co., Bucyrus, O.
S. M. Duty, Deckman-Duty Brick Co., Cleveland, O.
F. A. Chappin, Cleveland Hydraulic P. Brick Co., Cleveland, O.
R. F. Mack, Big Four Clay Co., Canton, O.
E. Maybaugh, Contractor, Cleveland, O.
F. E. Schultz, Albion Vit. Brick Co., Albion, Ill.
W. Perkins, Dunn Wire-Cut-Lug Brick Co., Conneaut, O.
R. E. Collins, City Clerk, Cleveland, O.
W. F. Thompson, Vice Mayor, Cleveland, O.
W. M. Nichols, Cleveland Brick & Clay Co., Cleveland, O.
L. E. Rodgers, L. E. Rodgers Engr. Co., Chicago, Ill.
J. B. Casaday, Wm. C. Corlins Co., Chicago, Ill.
H. L. Hendershot, Cleveland Brick & Clay Co., Cleveland, O.
G. M. Garrett, Civil Engineer, Cleveland, O.
Jos. P. Bayne, Engineer, Cleveland, O.
A. P. Maurer, Metropolitan Pav. Brick Co., Canton, O.
Wm. Turnbull, Contractor, Canton, O.
Carl H. Schmidt, Cleveland Bldrs.' Supply Co., Cleveland, O.
B. F. Weybrecht, Alliance Clay Prod. Co., Alliance, O.
Robert C. Mitchell, Farr Brick Co., Cleveland, O.
Henry Angel, Cleveland Bldrs.' Supply Co., Cleveland, O.
Geo. Champe, Civil Engineer, Toledo, O.
C. W. Courtney, Consulting Engineer, Cleveland, O.

A special supplement, suitable for framing, and showing members and guests of the N. P. B. M. A. on inspection tour is a part of this issue.

The reclaiming of once valuable land in Fresno County, Cal., now rendered useless through deposits of alkali from irrigation, which has been under discussion and experimentation for a number of years, is now to be done on a commercial scale. Ralph Merritt, controller of the University of California, has let a contract for the reclaiming of 160 acres of the Kearney Estate, owned by the University, to J. E. Mitchell. The work will be done by laying drain-tiles below ground, under the direction of H. A. Hart of the Reclamation Service of the United States Government. There are many thousand acres of similar land which has gone out of cultivation in California owing to lack of drainage, and it believed that this will now be a large part reclaimed. Several years ago, W. W. Mackie, of the United States Department of Agriculture demonstrated that tile drainage could be successfully used in restoring the ruined farm lands of Fresno County, but the present is the first effort on a large scale to put the plan into practice.

The San Francisco Board of Public Work has awarded the contract for the terra-cotta and masonry work on the new City Hall to Brandon & Lawson on their bid of $119,800. A lower bid was submitted on condition that the old brick from the ruins of the former City Hall be used in the work, but this was ruled out by the architect.

American Face Brick Association Sets Convention Dates

FACE BRICK MANUFACTURERS AND DEALERS WILL HOLD ANNUAL MEETING DECEMBER 10 AND 11, 1913, AT FRENCH LICK, INDIANA

At what is regarded as the most important gathering of face-brick manufacturers ever brought together, the American Face Brick Association, at its Pittsburgh meeting, held Sept. 23rd, decided to hold its annual convention at French Lick, Indiana, on December 10th-11th, 1913.

In accordance with previous actions the Face Brick Dealers' Association is to be urged to hold its annual meeting at the same time and place as that selected by the American Face Brick Association.

Representatives of twenty important face-brick plants east of the Mississippi river, and more than four-fifths of the production of face-brick in the East and Middle West, were present and the various discussions and resultant action mean that radical changes will be made in the face-brick business. Splendid progress was made in agreeing on future policies; a definite program has been adopted and the various moves that have been agreed upon will now be taken up and put into effect in regular order. A new constitution and by-laws will be ready to be submitted to the membership at the annual meeting, and will state more definitely the objects and purposes of the association, as well as the rules and regulations to which its membership subscribes.

The question of sales districts—that is, the amount of territory in which one sales office or dealer would have the exclusive sale of the products of certain manufacturers—was given considerable attention. This was a question raised by John H. Black, of Buffalo, at the meeting of the American Face Brick Association, held in Chicago, in March, 1913. At the Pittsburgh meeting, further insight was given the members into the importance of widening the territories assigned sales-agency offices, in order that they might be able to afford high-class salesmen, advertising and proper displays. A committee was appointed to work out the details and report at an early date.

Among other important topics discussed was the adoption of a uniform filing system, a uniform system of acknowledging orders, and a uniform telegraphic code, as well as a uniform cost system.

The Hydraulic-Press Brick Company, of St. Louis, Mo., was accepted by the membership committee and the election confirmed by the board of directors.

These firms were represented at the meeting: Alumina Shale Brick Company, Bradford, Pa., by Charles C. Stratton; Beaver Clay Manufacturing Company, New Galilee, Pa., by H. R. Beegle; Gloninger & Co., Pittsburgh, Pa., by J. H. Gloninger; Ironclay Brick Company, Columbus, Ohio, by J. M. Adams; Belden Brick Company, Canton, Ohio, by Paul B. Belden; Brazil Clay Company, Brazil, Ind., by W. J. Snyder; Columbus Brick & Terra Cotta Company, Columbus Ohio, by L. G. Kilbourne; Claycraft Mining and Brick Company and Claycraft Brick Company, Columbus, Ohio, by W. H. Hoagland; Hay Walker Brick Company, Pittsburgh, Pa., by Hay Walker; Toronto Fire Clay Company, Toronto, Ohio, by Joseph Nicholson and Paul McFadden; Jewettville Brick Company, Buffalo, N. Y., by John H. Black; Kittaning Brick & Fire Clay Company, Pittsburgh, Pa., by S. C. Martin and E. C. Clark; Hydraulic-Press Brick Company, St. Louis, Mo., by Ralph Simpkins; Twin City Brick Company, St. Paul, Minn., by W. Siwart Smit; McArthur Brick Company, McArthur, Ohio, by H. S. Hamilton; Ridgway Brick Company, Ridgway, Pa., by J. Parker B. Fiske; Puritan Brick Company, Hamden, Ohio, by Harold W. Holmes; Thomas Moulding Brick Company, Chicago, Ill., by Joseph W. Moulding, and Western Brick Company, of Danville, Ill., by Frank W. Butterworth.

The meeting was remarkable, not only on account of the large proportion of the industry represented and the widely scattered plants from which the men came, but on the grounds of harmonious, yet forceful, action and the enthusiastic support, physical and financial, that was given the various activities of the association.

BRINGS FAVORABLE IMPRESSION HOME.

Edwin A. Fisher, City Engineer of Rochester, N. Y., Comments Favorably on Work of Paving Convention.

Returning from the Cleveland convention of the N. P. B. M. A., Edwin A. Fisher, city engineer of Rochester, N. Y., in an interview given a representative of one of the leading papers of that city, expressed himself as being deeply impressed with the value of the tour of inspection upon which engineers of various municipalities were taken by Secretary Blair. The interview appeared in the Rochester, N. Y. "Post Express" and follows:

> In discussing the results of his recent trip to Cleveland, which is the center of the paving brick industry of the country, City Engineer Fisher said today that the association of manufacturers, the convention of which he attended by invitation, consists of about three-quarters of the brick makers of the country and is not organized or conducted with a view to fixing prices or monopolizing the trade, but for motives of a worthier sort.
>
> It is one of the objects of the association to have the output of the factories of its members of such a good quality as to redound to the advantage of the brick paving industry and another is to have the brick so laid that it will constitute the best possible pavement. The secretary of the association in his annual address went so far as to advocate that manufacturers refuse to sell brick to pavers who do not lay the material in a proper and approved manner on proper and approved foundations.
>
> The association has done much toward educating the officials of municipalities, particularly of the small ones, where the economy feature is the most prominent feature, up to a point where they will insist upon having a thoroughly good foundation, and the foundation is one of the vital points of a brick pavement as of most others.
>
> The association has done much towards a unification of specifications for brick paving. Some of the firms interested in the association send out their own engineers to counsel with contractors and city officials in regard to the foundation and manner of laying; methods of inspection, etc., and even to advise against the use of brick as a pavement in streets that would be better paved with another material.
>
> While all brick sent out from the factories are inspected, it is the aim of the association to make that inspection more rigid than it has been, so that there will be less rejection on the ground where the material is used.

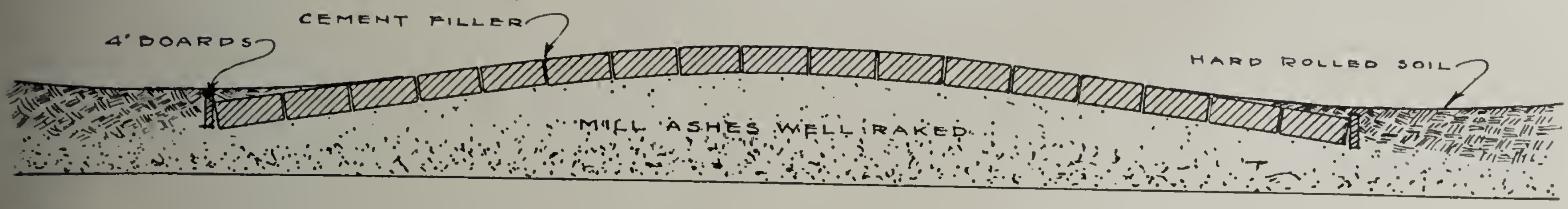
CLAY RECORD, OCTOBER 7, 1913

SUPPLEMENT TO BRI

Members and Guests of N. P. B. M. A. on Inspection Tour, Cleveland, O., Sept. 18, 1913

Low-Cost Brick Highways

MANUFACTURER SUGGESTS PAVEMENT FOR COUNTRY ROADS WITHOUT CURBING TO COMPETE WITH CHEAPER CONSTRUCTION



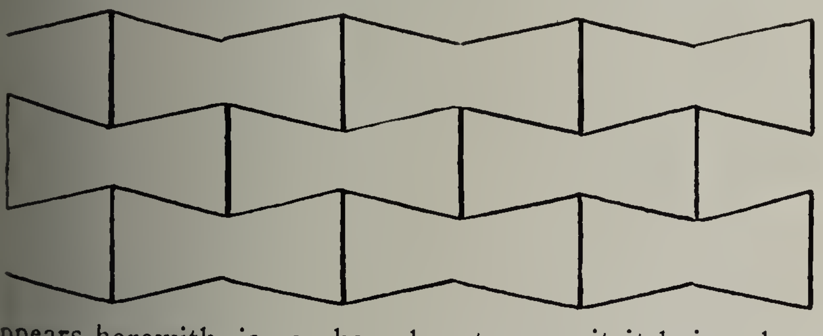
HOW can a brick-paved country road be constructed to compete with the cheaper forms of so-called permanent highways? This problem is one that has long confronted the manufacturer and some day someone is going to solve it. Two suggestions come to "Brick and Clay Record" which are offered for what they are worth.

At the convention of the National Paving Brick Manufacturers' Association in Cleveland, the week of September 15, C. P. Mayer, of Bridgeville, Pa., offered a plan which he says he is working out successfully and which he claims solves the low-cost problem and at the same time gives permanency. Mr. M. J. Stone, of Bigler, Pa., is sponsor for the other suggestion.

Mr. Mayer's plan eliminates the curbing which is an important item in the cost of brick construction. The drawings which accompany this article, show clearly his idea. Mr. Mayer maintains that inasmuch as traffic conditions are not severe on the average country highway it is not necessary to build so strong a foundation and he, therefore, urges the use of mill ashes instead of grout, these to be raked well to bring the finer particles to the surface as a bed for the brick. In lieu of the curbing he pegs in a four-inch board. As a matter of protection to the brick that form the edge of the road he draws the soil over the brick for one and a half feet and hard-rolls it.

"Cement curbing costs on an average of 17½ cents per foot," said Mr. Mayer in explaining his plan. "There being 10,560 feet to a mile, the cost, then, for the curbing will average $3,706 per mile. Deduct this amount from the cost of the average brick road and you have a form of brick construction that will compete in cost with the cheapest of the so-called permanent highways."

Someone has suggested that a newly patented paving block—also by a Pennsylvanian—might be a decided aid in Mr. Mayer's plan. This block, an illustration of which appears herewith, is so shaped as to permit it being dovetailed. It would seem, therefore, that it would hold the road firmly, if properly grouted, and thus eliminate the necessity for a curbing.



Mr. Stone's suggestion is for the use of the ordinary hard burned brick for country roads. **His letter is published in full without any comment:**

"Mr. Editor:—The writer is not in the paving brick end of the game and has no axe to grind. He is only interested in having brick come into its own whereever it deserves consideration. Unquestionably, the next ten years is going to be an era of good road construction. States are raising great funds, millions of dollars will be trodden under foot, or rather, thrown into the roads to be driven on.

"The man in the auto is the man who is going to bring it about. He is entitled to the best he can get for his money for it is his money that will foot the bills. We shall derive advantages from his work but his is the big end both in pleasure, work and taxes.

"The best of paving brick is none too good for heavy city traffic, where teams and drays wear and tear any kind of pavement to pieces, in time. In the country districts, however, it seems to me the problem is quite of a different nature and the brick problem a simple one and should be of such a nature that cost of brick roads will not seem so great and their superiority win out nearly every time.

"A properly graded road-bed, covered with common hard-burned brick, laid with the best cement mortar joints, will keep moisture out and wear indefinitely, subjected to the ordinary traffic of such roads. Teaming is but a fraction of that on city streets, hence the wear would be comparatively small and auto traffic would never wear out such a road. Instead of taking a stand wholly upon the use of 'pavers' why not make a stand for just brick, a good brick at a reasonable, marketable price?

"I trust the other fellow will pardon my 'butting in' and offering suggestions but I have wondered at his not making more of a drive and offering a compromise as between dirt and 'the best.'"

"Brick and Clay Record" would like to have a candid discussion from the readers on both suggestions offered and throws open its columns to whoever wishes to use them. It is only through such discussions that practical suggestions come.

CLAIMS MICHIGAN CLAY NEGLECTED.

Professor W. H. White of the chemistry department of the University of Michigan has pointed out the possibilities of a new and paying industry in the Beaver state, in the manufacture of pottery. He refers to the fact that Ohio has long been the great pottery producing centre and that Michigan capitalists have neglected the development of one of the state's greatest resources, the beds of pottery clay that lie within her borders. Admitting that the clay is not suitable for the finer grades of porcelain he maintains that the clays of Michigan are suited for the production of ordinary pottery in paying quantities.

The Truth About

This is the Repair Gang on the River Road, Wayne County, Mich. The labor cost alone of this gang is $21.75 per day, or about $6,300 annually.

Thousands of dollars have been expended in exploiting the Wayne County, Michigan concrete roads by the cement interests. These roads were built under the most exacting conditions. The highest development of concrete construction was adopted. The best of material was used and the most skillful labor employed under experienced engineering talent.

When completed these roads were advertised widely as the "one perfect way" and so successful has been this publicity that wherever permanent highway construction has been mentioned Wayne County is referred to.

That concrete is an improper material for highway or street pavements has been known for many years by engineers and others who have made a study of the subject. Influenced, however, by the wide publicity given what was claimed to be the "Advance System of Using Concrete," many have taken the Wayne County highways seriously.

Recently two villages in Illinois—Highland Park, and Desplaines, both suburbs of Chicago, decided to improve their thoroughfares. The village boards decided to investigate the Wayne County highways. In Highland Park a number of property owners, affected by the proposed improvements, through B. W. Schumacher, an attorney, employed the services of an expert engineer to make the investigation. This engineer, Paul E. Green, a member of the American Society of Civil Engineers, was given carte blanche.

William R. Hayes, a member of the village board of Trustees of Desplaines, was chosen as a representative to make an investigation.

Both investigations were made unknown to each other. The result of those two investigations are printed herewith in verbatum reports which were made to the two municipalities.

By Paul E. Green

(Member American Society Civil Engineers.)

DURING the past few years there has been a very considerable advocacy and promotion of concrete as a wearing surface for paved roads and streets. It is apparent that concrete possesses many features which tend to make its use attractive for that purpose. It is easily laid with practically unskilled labor. When new, it is dustless and smooth, sanitary, easily cleaned, with a not unattractive appearance. These advantages, combined with the fact that the materials for its construction, are available in nearly all localities, have caused it to spring into popular favor and the result is that in the last four or five years many miles have been laid. The record these pavements have made in the past has not, however, been entirely satisfactory, and engineering literature, other than that distributed by companies promoting the use of cement, has recorded numerous examples of failures.

The writer has made examination in detail of concrete

Wayne Co. Roads

Being the Report of an Impartial Investigator Employed by a Village Board to Get the Facts

What the Report Shows

THAT the Famous Wayne County Roads of Michigan which are heralded as ideal concrete pavements, are a failure.

THAT, instead of the cost of maintenance being $300 from the time of construction until now, as claimed and advertised by the cement makers, it is in the neighborhood of $30,000, and in all probability more.

THAT, despite the fact that the oldest of the roads is not five years old, and the majority of the highways has been less than two years in service, extensive repairs have been made.

THAT, in many cases, the bad condition of the roads has necessitated actual resurfacing.

THAT, two repair gangs are employed on the work—one all the time and the other a portion of the time and that these average $21 a day each, making $6,000 per year for the one at work constantly or about $9,000 per year for both.

THAT 32 per cent of the 1909 work, 27 per cent of the 1910 work, 14 per cent of the 1911 work and 21 per cent of the 1912 work is cracking and showing signs of wear.

THAT to keep concrete roads and streets in good condition there must be a constant maintenance after the first year and that this maintenance will increase materially year by year.

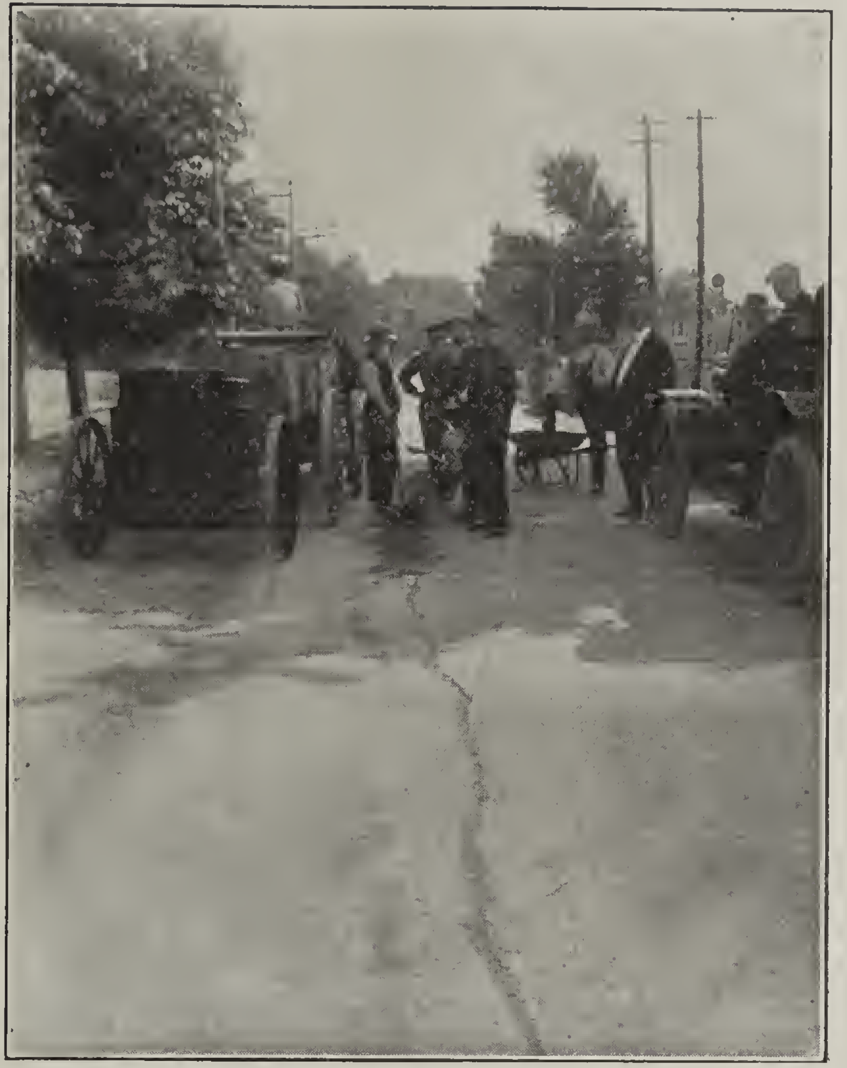
THAT a first class concrete road cannot be built for less than $1.60 to $1.75 per square yard and that at this price it would be inferior to a cement-grouted brick pavement, an asphalt-concrete pavement, a bitulithic pavement or a sheet-asphalt pavement, any one of which can be constructed at these prices.

pavements in many cities and has received first-hand reports from other places. Some of these cities are as follows:

Chicago, Ill.; Gary, Ind.; New Orleans, La.; Waco, Tex.; Marlin, Tex.; Burlington, Wis.; Highland Park, Ill.; Highland Park, Mich.; Detroit, Mich.; Wayne County, Mich.; Mason City, Iowa; Windsor, Ontario; Fond du Lac, Wis., and several others.

In most of these cities, concrete more than three years of age can hardly be called a success since if it has not been carefully maintained, it has become full of holes and cracks and is very unsightly in appearance. It is, of course, not possible ordinarily, and it has not been so in the present case, for any one man to examine thoroughly all the various examples of such pavement laid throughout the country, but of such pavements which have been investigated, the large proportion of failures observed by the writer has caused him to seriously doubt the utility of this product as a wearing surface, in cities especially.

While cracking may not be a serious defect as far as concerns appearance on country roads, the writer has always believed that in city streets, where the value of the abutting property is largely dependent upon the character of the street pavement, and is so recognized by the laws of practically all our states, the tendency of concrete to crack and spawl is a serious objection to its use.



The Second Repair Gang Working on River Road. This picture shows cracks and joints being repaired with tar in 1913 *after being filled in* 1912.

It has been maintained, however, by the advocates of concrete pavements, that much, if not all this cracking has been caused by improper specifications and that it can be eliminated by careful construction and also by proper reinforcement with steel. It is believed that this assertion is at least partially correct and that while such reinforcement will not eliminate this tendency entirely, it will reduce it largely. The steel reinforcement will, however, if used in the proper quantities, and correctly and carefully placed, add a very appreciable item to the cost of construction.

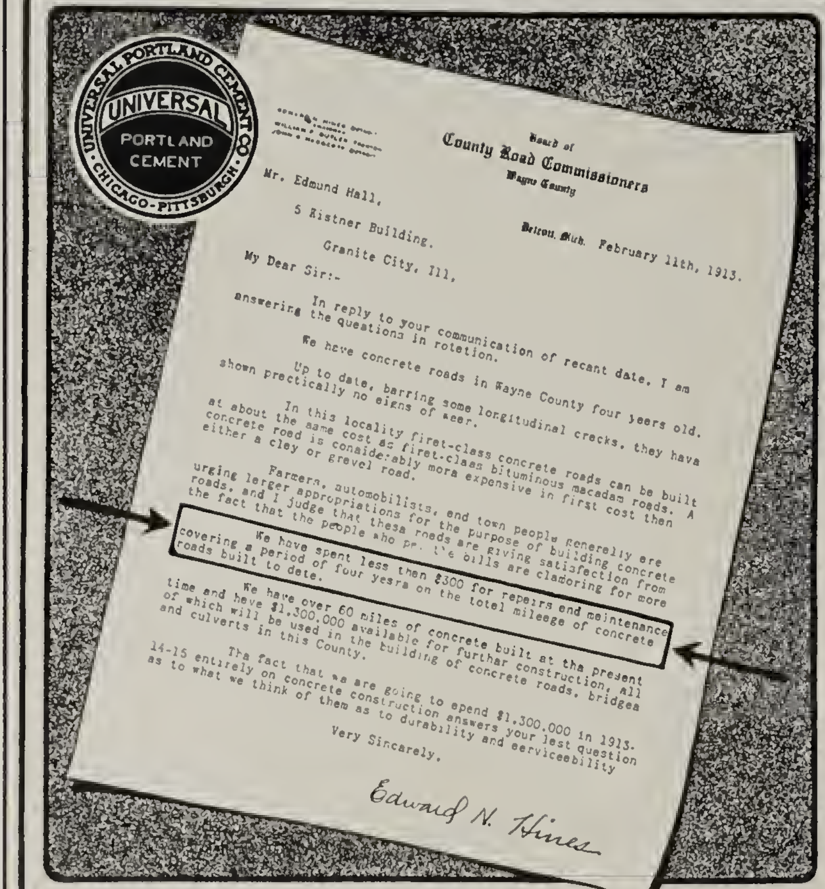
Another weak point in the lasting qualities of concrete as a wearing surface, is the fact, about which there can be little dispute, that it is deficient in its ability to withstand abrasive action. As long as the surface is smooth and perfect, the destructive effect of traffic is small, but if any break occurs, the ravelling action of iron-shod horses and iron-tired vehicles is very apparent and the action rapidly disintegrates the concrete, the surface soon becoming very rutty and full of holes. This result is to be expected from the character of the material, since concrete will withstand a very considerable compression, but a very inconsiderable shear or tension. In reinforced concrete work the allowable working stress for tension is rarely over one hundred (100) pounds per square inch; and for shear—eighty (80) pounds per square inch; and

THE TRUTH ABOUT WAYNE COUNTY ROADS

The Universal Portland Cement Co., which furnished the cement for the Wayne County Highways, and which used these roads as examples of ideal paving in their advertising, have widely circulated the claim that LESS THAN $300 HAS BEEN SPENT FOR REPAIRS AND MAINTENANCE, COVERING A PERIOD OF FOUR YEARS. Below at the left is one of the numerous advertisements which have carried these misleading statements. This ad appeared in many of the trade journals the past year. Note that an autograph letter from Edward N. Hines, chairman of the County Road Commissioners in Wayne County, is used prominently in PROVING the low maintenance cost of the highways.

Parallel with the cement ad and its misleading information are extracts from Mr. Green's report published elsewhere. Mr. Green conclusively proves that the Wayne county highways actually have cost more than $9,051.22 in 1912 and 1913 alone to maintain which includes only a few months of 1913.

Here is What Was Claimed



Board of
County Road Commissioners
Wayne County

Mr. Edmund Hall,
5 Kistner Building.
Granite City, Ill,

Detroit, Mich. February 11th, 1913.

My Dear Sir:-

In reply to your communication of recent date, I am answering the questions in rotation.

We have concrete roads in Wayne County four years old.

Up to date, barring some longitudinal cracks, they have shown practically no signs of wear.

In this locality first-class concrete roads can be built at about the same cost as first-class bituminous macadam roads. A concrete road is considerably more expensive in first cost then either a clay or gravel road.

Farmers, automobilists, and town people generally are urging larger appropriations for the purpose of building concrete roads, and I judge that these roads are giving satisfaction from the fact that the people who pay the bills are clamoring for more.

We have spent less than $300 for repairs and maintenance covering a period of four years on the total mileage of concrete roads built to date.

We have over 60 miles of concrete built at the present time and have $1,300,000 available for further construction, all of which will be used in the building of concrete roads, bridges and culverts in this County.

The fact that we are going to spend $1,300,000 in 1913-14-15 entirely on concrete construction answers your last question as to what we think of them as to durability and serviceability.

Very Sincerely,

Edward N. Hines

The concrete roads of Wayne County, (Detroit), Michigan, required 100,000 barrels of UNIVERSAL Portland Cement in 1912 The fact that an additional 100,000 barrels are being delivered for 1913 construction is evidence of the complete satisfaction UNIVERSAL is giving.

The Fifth and Sixth Annual Reports of the Wayne County Road Commissioners give complete descriptions of the road improvements around Detroit We will mail either or both reports upon request.

Universal Portland Cement Co.

OFFICES
72 West Adams Street Chicago
Frick Building Pittsburgh
Security Bank Building Minneapolis
Annual Output 12,000,000 Barrels
Plants at Chicago and Pittsburgh

Here are Actual Facts

Fact No. 1—:

Two labor gangs are employed—one all the time, on the Wayne County Highways since the first year of their construction.

Fact No. 2—:

The foreman of one of these gangs, a photograph of which is shown elsewhere, told Mr. Green that it cost $21.75 per day for the labor alone, which is in the neighborhood of $6,000 a year for this one gang.

Fact No. 3—:

The second labor gang, a photograph of which also is shown elsewhere, costs for labor alone $22 per day, which, in round numbers is $3,000 annually as it is only employed a part of the time.

Fact No. 4—:

The item of sand and tar used by these two gangs is an unknown quantity but it is reasonable to suppose that at the lowest and most conservative estimate it will reach more than $6,000.

Summary

Two labor gangs at $9,000 per year, and for three years	$27,000
Material used (Estimated)	6,000
Total maintenance	$33,000

for reinforced work, these figures are reduced. Thus, when a hole is started in a concrete surface, it is exposed at its weakest points.

During the past three or four years, Wayne county, Michigan, has come into prominence because of its construction of a large mileage of concrete highways, and it has been stated that in this county can be found the finest examples of such work that have ever been constructed. The city of Windsor, Ontario, immediately opposite Detroit and Wayne county, has also paved a great many of its streets with concrete. Wayne county in particular has been tremendously advertised by the cement companies, and hundreds of people, city officials and others, have been taken to Detroit and shown these roads. While the writer had examined a great many concrete pavements in other cities, he had never seen these pavements.

The city of Highland Park, Illinois, is contemplating the construction of similar pavements for its streets. It is a very high class residential suburb of Chicago; property is valuable; the physical appearance of any improvement is of decided moment, and therefore some of its prominent citizens were desirous of obtaining more exact knowledge as to the character of these roads before committing themselves to the policy of constructing them.

The writer was commissioned therefore, to inspect the roads of Windsor, Ontario, and Wayne county, Michigan, and to make an impartial report on the same with the recommendation as to the suitability for the city of Highland Park. This examination was made June 18th, 19th, and 20th, 1913, using an automobile and identifying the various roads and sections by means of the series of reports of the Wayne county Road Commisioners.

Highland Park, Michigan, a suburb of Detroit, was also examined but for lack of time, only one street was thoroughly looked into. Also, a number of streets in Windsor were investigated. Probably the best explanation of these examinations would consist of a verbatim copy of the writer's notes which are herewith given.

PAUL E. GREEN.
The Man Who Found the Truth in Concrete Roads.

HIGHLAND PARK, MICHIGAN. (Suburb of Detroit)—The paving on Beresford Avenue is less than one year old, a part having been built in 1912 and part in 1913. It has iron joints 30 feet apart. The street is smooth and looks fine, but slight longitudinal cracks are developing along entire center of street. No expansion joints have been used at curbs. This street (24-foot roadway), is of fine appearance, but indications are plain that it will be badly cracked in twelve months more. The sub-grade was made parallel with the finished surface, and concrete—7 inches thick—reinforced with "Thomas" mesh, and mixed—1-3-5—was laid in one course. The crown is about six inches.

It was stated that in newer work the subgrade is being made flat, all crowning coming in the concrete itself.

WINDSOR, ONTARIO. — Chatham Street, west from Ouilette, was examined. It is of plain concrete, badly cracked. Transverse expansion joints are about 100 feet apart. The surface is bad; many holes, many repairs, and the cracks filled with tar. The same street east of Ouilette is somewhat better as to surface, though badly cracked. Both pavements very badly worn, where the traffic uses them and where it is not affected by cracks. Continued maintenance is evident. The surface seems to be a pebble mix. It is a semi-business and residence street. Traffic, mostly light commercial. Crown, average about 8 inches. Roadway, 30 feet in width, 6 inches thick. Seven years old. It is a three course pavement.

(4-inch 1-3-6) (1-inch 1-1 ½-3) (1-inch 1-2).

Wyandotte Street, (Glengarry to Waterwill) is seven years old. It was examined from Parant Avenue, west. It is constructed of three course concrete, same as Chatham, except joints are placed every 25 feet. The traffic is fairly heavy for a small town, and one car-track is located in center of the street. The pavement is badly cracked and worn.

London Street, from Ouilette, two blocks west, is a two-course pavement, reinforced with No. 9 Paige wire fence. It is one year old. Expansion joints were placed The traffic is fairly heavy, being estimated at from 300 to 500 vehicles per day, outside of street-cars. This is a very good example of a concrete pavement. The wire reinforcement cost 7c per square yard and appears to be serving its purpose, as the concrete is fine; only three or four small cracks in two blocks. Some wear is apparent, but all in all, this is the best concrete pavement in Windsor.

Windsor Avenue, Wyandotte to Erie is in its fourth year, and is composed of two courses (4½ in. 1-2-4) (1½ in. 1-2). There are many cracks which have been tarred. Some abrasion is apparent. The traffic is light, the street being purely residential. Expansion joints have been placed about 40 feet apart. It is to be noted that a plain macadam on Windsor north of Wyandotte, six years old, having the same traffic, is in fine condition. As far as appearance goes, it is more pleasing, though probably somewhat more muddy in wet weather and dusty in summer.

Park Street, from Windsor Avenue, west, is seven years old; of three courses, the same specifications as for Chatham Street being used. It is badly cracked and worn in large holes, has a fairly heavy traffic, and is in bad condition and very unsightly.

Average price of concrete reinforced with wire in 1913, is about $1.27. All of Windsor concrete pavements are of two or three courses with sand or pebble top.

The concrete pavements in Windsor have been maintained, evidently, as carefully as possible. As a whole, however, they are very unsightly and cannot compare with any other standard pavement. No information as to the cost of maintenance is available, but it has been a considerable item.

All information as to specifications of Windsor pavements was obtained from the City Engineer, who was very courteous and painstaking in supplying information.

DETROIT, MICH.—Only one concrete street was examined in the city of Detroit, and that, rather casually. This was Elmwood Avenue, (Collins Avenue). It was laid in 1910. The joints are 30 feet apart, protected with a "Baker" joint; it is composed of two courses, 5 inches and 2 inches respectively; badly cracked. It has been stated that bids on reinforced pavement in 1912 ran from $2.61 to $2.75 per square yard.

WAYNE COUNTY, MICH.—The Fort Road is concrete 12 feet wide; 3,000 feet long; cost $1.317 square yard; built in 1910; it is one course (6 inches 1-2-4) sand and gravel. The surface is concrete, rough and loose, and has been covered with bitumen, which is scaling

The Photograph at the left was taken by Mr. Green, as were all the others illustrating this article, and shows a section of the Grand River Road, Wayne County, surfaced with "Dolarway" in 1912. Observe the scaling action on tar. This section of concrete was in bad condition, some of it being loose and disintegrated. The picture at the right is the 1911 section of the Grand River Road showing repairs that have been made. These, Mr. Green says, will have to be made every year.

off in large patches. Joints—at least some are iron bound; concrete is rutted and bad; looks more like plain macadam than concrete. Photograph No. 1 shows condition.

Fort Road, three miles—built in 1912; standard specifications; surface—fine, smooth and attractive; joints—every 25 feet, armored; cracks—few; crown—flat; maintenance—practically none; traffic—light; only one year old; has best surface of any seen. A fine example of concrete in great contrast to first (1910) section. Roadway width is 12 feet.

Grand River Road; one-half mile, built in 1909. Same specifications as Woodward Road, except one course 1-2-4. Cost $1.31 per square yard. Surface is good, fairly rough. Joints filled with tar. Cracks—about twenty in one-half mile. Crown—light, almost flat. Maintenance—filling of holes and cracks with tar. Traffic—medium, and mixed, teams and autos, estimated 900 to 1,000 vehicles per day. Remarks—The surface is worn badly in many spots, but the road is very good in general. Many holes (small) have developed and have been filled with tar, practically every slab having one or two or more. The road is not badly cracking, however, but would have failed except for careful maintenance.

Grand River Road, 1910 section; 16-foot roadway; 6,500 feet long; cost $1.204 per square yard; two course work—4 inches 1-2½-5, sand and crushed cobbles; 2½ inches 1-2-3 mix, sand.

Surface:—Only fair. East end badly worn in several points.

Joints:—Every 25 feet; filled with tar.

Cracks:—Seventy-three slabs, 1,825 feet out of 6,500 feet.

Crown:—Flat.

Maintenance:—Filling joints and cracks with tar, and repairing holes.

Traffic:—300 to 750, mixed, mostly autos.

This stretch appears to have had some bad concrete, and joints to be badly worn in spots. Several stretches have been fully tarred and covered with crushed gravel. Road appears to be failing in places. Photograph No. 4 shows repairs by filling holes with tar, etc. There are thousands of these holes.

Grand River Road; concrete, 16 feet wide, 13,255 feet long; cost $1.718 per square yard; built in 1911; one course 7 inches 1-1½-3; "Baker" joints; all work of 1911, same mix, using washed sand and pebbles.

Surface:—Fine.

Joints:—Iron bound;

Cracks:—Few (30 slabs, 759 feet out of 13,255).

Crown:—Flat 3 inches.

Maintenance:—There seems to have been hundreds of little holes started which have been filled with tar and covered with sand. Maintenance probably quite heavy on this stretch. Evidently faulty concrete work which has been promptly repaired by County.

Grand River Road, 6 miles; built in 1912; Mix 1-1½-3.

Surface:—Smooth.

Joints:—Iron, considerable scaling at nearly all and pit holes at a few.

Crown:—Flat.

Cracks:—Many; not counted.

Maintenance:—On lower part (1 mile) a great many holes which required filling with tar. On this part of this section and the 1911 section, there were thousands of small holes to be repaired, outside of which concrete seemed good. After a rain, however, many porous spots are noticeable, and it is probable that many more holes will develop.

It is also apparent that the iron bound joints are not a full protection. In a great many instances the joints have been tarred over, showing wear and where exposed considerable spawling is evident. Do not consider Grand River Road as good as Woodward, though somewhat fewer cracks. There are small holes apparent clear to the end of this section and also many cracked slabs.

Gratiot Road, is concrete 16 feet wide; 8,000 feet long; cost $1.089 per square yard; built in 1910; one course, 7 inches 1-1½-3, sand and gravel. The first mile and one-half of this has been tarred, and so could not see the surface. Chauffeur stated that it was full of holes before, worse than any we had gone over. The upper (east) end of this section was very rough, full of holes and badly worn. It had evidently been tarred before and a second coat of tar is now being spread. This assumption was confirmed by Wayne County office. This section evidently has been a failure. Traffic heavy (500). Many trucks and teams. Evidence of repairs, digging out of concrete, etc., consists of piles of broken, excavated concrete. Same noticed on Grand River Road where the entire shoulders in spots are covered with chunks of defective concrete, which has been taken out of the road.

Gratiot Road is concrete 16 feet wide, 8,000 feet long; cost $1.66 per square yard; 7 inches thick; mix 1-1½-3 screened sand and gravel; built in 1911. Surface rough and worn; many small patches filled with tar and sand; much abrasion shown; joints widely worn. Not many cracks (25 slabs). This road is wearing very considerably and in two years will need resurfacing. Traffic fairly heavy and much of it heavy trucking.

The 1910 Section of the Ford Road Showing Cracks and Scaling of Tar Surface. The Road is Badly Worn and Rutted.

This is Mack Road, Village of St. Clair Heights, Wayne County, showing Condition of Surface Today. It was Resurfaced with "Dolarway" in 1912.

Mack Road is concrete; 15 feet wide; 1,600 feet long; cost $1.34 per square yard; built in 1910; one course six (6) inches 1-2-4 of mixed sand and gravel. In very bad condition; many holes and cracks; has been covered with "Dolarway" (1912 report) but that is practically all gone. Traffic is fairly heavy with much teaming.

Mack Road is concrete; 15 feet wide; 1,600 feet long; cost $1.75 per square yard; built in 1911; mix 1-1½-3 of washed sand and gravel, 7 inches thick. Also Experimental Section, 75 feet long reinforced with Am. Steel and Wire mesh; few cracks were apparent. Observation not first-class as it was raining heavily. Good but wearing badly. Heavy hauling to Lozier automobile plant. Road beginning to wear in ruts.

Michigan Avenue is 18 feet wide; 12,000 feet long; City limits to Reckner Road; cost $1.31 per square yard; built in 1910.

Concrete:—One course 7½ inches 1-2-4, using washed sand and gravel.

Surface:—Rough and badly pitted in many places.

Joints:—Tar filled.

Cracks:—One hundred and twenty-two slabs cracked (4,300 feet).

Crown:—Flat.

Maintenance:—Tarred in many spots, and joints and cracks filled.

Traffic:—Mixed, largely autos, probably 500.

There are a good many badly spawled and cracked slabs. Much of the road, unless carefully maintained, will go to pieces in two or three years. Where cracked, it was bad.

Michigan Avenue is concrete; 39,723 feet (7½ miles) from Reckner Road to Dearborn Road; 18 feet wide, and from Dearborn to Wayne 16 feet wide; built in 1911.

Between Dearborn and Wayne the road is first-class. Very few cracks and no holes. The best concrete seen yet. East of Dearborn it is not so good, several stretches requiring tarring and many cracks. The joints on 1911 work are all iron. In front of Poor Farm the roadway is widened and some abrasion shows. On the whole, a fine example of concrete road.

Mt. Elliot Road is concrete; 12 feet wide; 4,000 feet long; built in 1910; two courses: (4 in. 1-2½-5), sand and limestone, other course (2 in. 1-3 sand?).

Cost:—$1.44 per square yard.

Surface:—Good, few cracks.

Joints:—Tar filled.

Cracks:—Nineteen in 0.8 miles; nearly all transverse.

Crown:—Flat.

Maintenance:—Small, filling of joints and holes.

Traffic:—Fairly heavy; hauling to R. R. Yards.

Only two or three slabs are cracked longitudinally and this probably on account of narrow roadway (12 feet). There has been considerable patching at joints and on sides with tar and sand. Careful maintenance has kept this road good.

Mt. Elliot Road is concrete; 18 feet wide; 2,400 feet long; cost $1.65 per square yard; 7 inches thick; mix 1-1½-3 of screened sand and pebbles; built in 1911.

Surface:—Good; with some patching (tar).

Joints:—Tar on sides and at joints.

Cracks:—Few, only 13 slabs; all transverse cracks.

Crown:—Flat.

Maintenance:—Tarring cracks.

Traffic:—Considerable heavy hauling.

Good condition. Little worn. Quite a few transverse cracks, but at present no longitudinal cracks.

Mt. Elliot Road.—Surface:—fine; only about 1,000 feet built in 1912. All in good condition. A fine piece of road.

River Road is concrete; 15 feet wide; 4,000 feet long; built in 1910; one course 6 inches, mix 1-2-3 of washed sand and gravel;

Cost:—$1.288 per square yard.

Surface.—Rough, many cracks.

Crown:—Flat.

Maintenance:—Very considerable (holes and cracks).

Traffic:—Fairly heavy, probably 300 vehicles per day.

Remarks:—Rough in spots. The concrete is full of small holes which, on a second trip, (July 10th), found were being repaired. Surface shows considerable abrasion and wear.

River Road was built in 1911 and 1912; concrete; 15 feet wide; 7 inches deep; 1-1½-3 mix of washed sand and pebbles. For about one mile north of Trenton, concrete in good condition but considerably worn, (42 slabs cracked). Joints armored but scaling and wearing badly. Traffic fairly heavy and many teams. South of Trenton, road not so worn and much smoother. In 3½ miles counted 176 cracked clabs (4,400 feet). Roadway smooth and little worn south of Trenton. This section was started in 1911 and finished in 1912 north of Trenton. South of Trenton, traffic is not so heavy, and road is much smoother.

River Road; Two and one-half miles additional built in 1912 besides 3 miles from Trenton north, which was part 1911 and part 1912.

Mix:—1-1½-3 of washed sand and pebbles.

Crown:—Flat.

Maintenance:—None.

Traffic:—Light.

All this good and but few cracks and signs of wear apparent. This road is 1912 construction, entirely, from three miles south of Trenton. A fine example of con-concrete road.

Woodward Avenue leading out of Detroit; one mile long; concrete; 18 feet wide with three feet, six inches (3 ft. 6 ins.) shoulder; two course (4 inches 1-2½-5) second course, (2½ inches 1½-2½-3).

Joints:—Twenty-five feet apart; filler various; cost $1.28 per sq. yd.; built in 1909.

Surface:—Good, somewhat rough, large stones exposed in surface, evidently considerable abrasion, which is being well endured.

Joints:—Generally filled with tar.

Cracks:—Quite a few, both longitudinally and transversely, (83 slabs).

Crown:—About two inches.

Maintenance:—Apparently little except filling joints and cracks with tar.

Traffic:—Fairly heavy, (1,000), seems to be almost entirely autos. Estimate maximum 24 hours traffic at 2,500 of which 80 per cent would be autos.

A good road; much better than the Windsor pavements.

Woodward Avenue; concrete; 18 feet wide and shoulders; built in 1910.

Two course (4 inches 1—2½—6; second course 2 inches 1-2-3)—6,000 feet long; cost $1,287.

Surface:—Good.

Joints:—Twenty-five feet apart, filled with tar.

Cracks:—Forty-seven slabs (1,175 feet out of 6,000).

Maintenance:—Filling of cracks and small holes with tar.

Traffic:—Mostly autos, total probably (600 to 2,000) 80 per cent autos.

Remarks:—Good condition. Smoother than first section as to surface.

The average cost of concrete pavement using prices shown in foregoing examples has been $1.37. This includes three-foot, six-inch, shoulder of sand.

SUMMARY OF CRACKED SLABS.

(Wayne County Roads.)

Road.	1909.		1910.		1911.		1912.	
Grand River	20	0.5	73	1.25	30	2.25	Not counted many.	
Gratiot	..	...	Coult not count because of rain.		25	1.5	..	...
Mack	..	...	Had many holes, not counted.		Few.		..	...
Michigan Av.	..	...	172	2.2	Few in 7.5 miles, not counted.		Not examined.	
Mt. Elliott	..	...	19	0.8	13	0.5	2	0.2
River Road	..	...	Covered tar.		42	1.0	*76	1.5
					*100	2.0	..	...
Woodward Ave.	83	1.00	47	1.2	...	....	..	...
Total	103	1.5	311	5.45	210	7.25	78	1.7
Per cent of slabs cracked	32%		27%		14%		21%	

Total cracked slabs counted....................702 in 15.9 miles.

Average per cent of cracked slabs............................21

Part of this road was built in 1911 and part in 1912. There were 173 cracked slabs counted in 3.5 miles, and as observer was unable to tell where 1911 work ended, the amount was divided as shown in table.

In general, the specifications in the case of Wayne county were taken from the Fifth and Sixth Reports. In the case of Windsor, they were obtained from the City Engineer and in the case of Highland Park, Mich., from a property owner who is an engineer and has been following the subject closely.

One of the things that impressed the writer in his examination of the reports of the Commission, was the very low maintenance charges shown, amounting to two hundred dollars ($200.00) in 1911; and one hundred dollars ($100.00) in 1912—total of three hundred dollars ($300.00) on sixty-five (65) miles of concrete highways; or if we eliminate the 1912 construction, on forty (40) miles of highway. These figures have been widely advertised, and they are most remarkable figures, though the maintenance charge on any permanent pavement used as a Country highway should be almost nothing for several years after its construction. In the examination therefore, of the highways, special attention was paid to this point. As a result of this examination it would appear that the maintenance has vastly increased since the Sixth Report, dated September 30th, 1912, and in order to keep the roads in first-class condition a great deal of patching with tar and sand has been done.

An examination of the above notes and table will show that there are several thousand cracks and joints which have been filled with tar and then covered with tar and sand, combined with several thousand small holes which have been similarly treated. In addition there are three different roads which have been covered with tar and sand in the fashion of the so-called "Dolarway," as shown in the Sixth Report of the Commission, on Gratiot, Mack and Grand River Roads. Of this the great bulk was on Gratiot and this road is now being given a second coating of the same material.

Use Tar to Cover Up Cracks.

It was very evident from an examination of these three roads that this material was put on top of the concrete pavement because of defects in the wearing surface. (This is very clearly shown in the notes of the writer on those roads in question.) This tar coating has practically disappeared from Mack road, only a few small patches showing, and from Grand River road, and as was stated before, is being replaced in its entirety on Gratiot road; also as stated before in the notes, Mack road at this point is in very bad condition, being full of holes and cracks; Gratiot road where exposed is very rough and rutty and the same remark applies to Grand River road. It is believed, therefore, that the maintenance has very largely increased in 1913. Just why, the writer is unable to state except that much of the surface has suddenly developed defects in 1913.

Included in the 65 miles there are many miles of concrete highway which are in fine condition. There can be no question but that the Wayne county has almost an ideal system of maintenance and the results are very apparent. The Commission keeps one repair gang, and part of the time two, at work on the roads under its jurisdiction and even very inferior construction is kept in most excellent shape. Cracks and holes are promptly repaired; ditches kept clean; drainage is excellent, and all in all, it is the most perfect system of road maintenance the writer has ever seen. Wayne county is certainly to be congratulated on such excellent administration. It is the writer's belief, however, that that part of the expenditures charged to "Experimental Work" in 1912, should really have been charged to maintenance and that not all the actual repair work on the concrete roads has been accounted for.

The writer believes that concrete is a most excellent material; that it has its place in road building; but he is far from convinced that it is a panacea for all road ills, and it is certainly a fact that the cost of maintenance, which is one of the fundamental charges against all pavements should be honestly, thoroughly and scientifically inquired into and noted in any report dealing with the subject. In the long run a full and frank statement of facts cannot injure any meritorious material.

An estimate has been made in connection with preceding table and notes as to the actual cost of what the writer considers maintenance. In this estimate every endeavor has been made to be extremely conservative, both as to quantities and prices. It is believed that the figures to be given represents the minimum cost of such maintenance and that the probable cost is at least 50 per cent greater. It is realized that it is extremely difficult to prepare an actual estimate of the cost of repairing thousands of cracks and holes in concrete, and it is at best but an educated guess. It is, however, in the writer's judgment, a great deal nearer the actual cost of the real maintenance than the figures given in the Fifth and Sixth Reports before mentioned—($300.00), since other items, not then considered maintenance, are now clearly so.

Referring again to the table, it will be seen that the percentage of cracks decreased yearly, except that in 1912 there was an increase. While this increase may be only apparent as but a small part when the 1912 work was examined, it is believed that these cracks will increase yearly in the various sections until they approach the list of the 1910 sections. The same tendencies were found in every year's work and it is very doubtful if the increase in thickness (from six to seven and seven and one-half inches) will at all eliminate this objectionable feature. However, in order to be conservative in figuring maintenance, the writer has made the presumption that 15 per cent of all of the slabs are cracked and that these cracks, in order to prevent them from disintegrating into wide holes under traffic, must be filled with tar and sanded; and that all the joints between the slabs on work laid previous to 1911 must be similarly filled. It should be noted that on all Wayne county work, expansion joints extend across the roadway every twenty-five (25) feet, and that in most of the 1911 work, and all of the work since that date, these joints have been protected by iron plates.

There are 211 slabs per mile of roadway.

65 (miles) x 211 (slabs)	13,715 slabs
15 per cent of 13.715	2,058 cracked slabs

The 1909 and 1910 work as taken from the reports amounts to a total of 12.4 miles.

12.4 (miles) x 211 (slabs)	2,616 joints

The average length is assumed to be 18 feet.

The total number of joints and cracks to be filled therefor	4,674

Material Required.

The estimated quantity of tar for each crack: ;
½-in. x 2-in. 18 ft. (depth of each crack:
¼-in. x 4-in. x 18 ft. (width of tar)
The total for each crack, therefore, is 1,875 gallons.
For each joint:
½-in. x 2-in. x 18 ft. (Depth)
½-in. x 6-in. x 18 ft. (Top)
Requiring 3.75 gallons.

Total tar for cracks: 2,058 x 1.875	3,859 gallons
Total tar for joints: 2,616 x 3.75	9,810 gallons
	13,669 gallons
Average cost of tar per gallon in tar wagon	$ 0.06
Cost of tar therefor	820.14
Sand required (4 cubic yds. per mile, at $1.25)	112.50
Total cost of material	$932.64

This takes nothing into account outside of tar and sand. It is very evident by inspection that in several places entire slabs have been replaced with new concrete. As for example, the Grand River road.

Labor.

In making the examination of these roads the repair or patrol gang was encountered and thus a good idea of the amount of work such a gang can do was obtained. The foreman was exceedingly obliging and cheerfully furnished the information desired.

The repairs of the concrete roads is taken care of by two gangs part of the time and one gang all the time. These repair gangs consist of a team hauling a wagon-load of sand and a small tar kettle holding about two hundred gallons, and in addition, five men and a foreman. The cost of this gang is as follows:

One team at $5.00 per day	$ 5.00
One man at $3.50 per day	3.50
One man at $2.50 per day	2.50
Three men at $2.25 per day	6.75
One foreman at $4.00 per day	4.00
Coal for heating tar	.50
	$22.25

This gang proceeds regularly over the roads, and where the repairs are not too heavy, such as removing entire slabs, etc., will average about a mile per day of concrete surface repaired. On sixty-five miles, this would mean a labor cost of $1,446.20, to which must be added the cost of the tar, $932.64, making a total of $2,378.84, which represents the 1913 repairs. It may be estimated that the 1912 repairs performed by this gang was at least sixty per cent of the above amount.

This estimate represents the cost of repairing only the very small holes, cracks, and joints. It does not take into account at all the resurfacing with the "Dolarway" referred to in the Sixth Report of the Wayne County Commission as "Experimental Work," and which the writer believes should be charged to maintenance.

Holes Worn in Surface.

As will be seen by the examination of the notes, there are thousands of small holes which have been filled with tar and sanded. The writer encountered one crew just as it had finished making repairs on Grand River road but had no opportunity to talk to them. Of all the roads Grand River road is the worst in respect to the very large number of small holes which had to be filled. It is estimated that on the 1910, 1911 and 1912 work on the Grand River road that there are not less than five thousand small holes which have been filled. This is very vividly shown in one of the photographs. If we take the average hole to be six inches by six inches by one inch (6 in. x 6 in. x 1 in.) in depth it will require 0.0208 cubic feet of material to fill it and will be 0.25 square feet of surface. Five thousand such holes will require one hundred and four (104) cubic feet or 780 gallons of tar and if we assume that all the rest of the roads have only 33⅓ per cent of the same proportion of holes then there would be a total of 15,000 holes to be filled and the cost of making these repairs is as follows:

2,340 gallons of tar at .06 per gallon	$140.40
Sand to cover holes, 100 cu. yds., at $1.25	125.00
Total cost of material	$265.40
Labor (same gang at $22.25 per day), cleaning out one hole every minute, or an average of 600 holes per day, making an average cost per hole of .037 and a total cost for 15,000 holes of	555.00
Total cost of labor and material	$820.40

Resurfacing with "Dolarway."

According to the Sixth Annual Report, a total of $1,712.59 was expended for "Experimental Work" on "Dolarway" pavement. It should be explained that "Dolarway" consists essentially of coating a concrete surface with tar and spreading sand over the tar. It is the writer's belief after careful examination that this should be entirely charged to maintenance, more especially in view of the fact that this year the surface of Gratiot road for about one and one-half miles is again being resurfaced with the same material. Thus, the total maintenance for 1912 and 1913 on the concrete roadways may be estimated as follows:

Joints and cracks, 1912 and 1913	1912	$1,427.30
	1913	2,378.84
Holes		820.40
Surfacing with "Dolarway"	1912 and 1913	3,425.18
Total		$8,051.72

In addition, it will require not less than $1,000.00 to put Mack road in good condition, making a grand total for maintenance to date of $9,051.22, or about $140.00 per mile, if the entire mileage of sixty-five miles is considered; or about $226.00 per mile of only work constructed previous to 1912 is considered. And this figure is the minimum figure possible; relates to the surface of the pavement alone and takes no account of ditching, draining, hauling, replacing entire slabs, etc., etc. In fact, it is the opinion of the writer, after talking to the foreman making repairs, that the actual maintenance is $5,000.00 more than this.

On Green Bay road, Highland Park, Ill., a short concrete roadway has been built (laid 1912), similar to the Wayne county roads. This road, while no cracks have as yet developed, is wearing rapidly, the south end being especially badly worn, deep ruts being already in evidence. It was probably not so carefully done as the Wayne county, Mich., work. The traffic is heavy, mostly automobiles, though there is considerable horse traffic.

It might be pertinent to remark, that if the macadam roads of Wayne county had been as carefully and systematically maintained as the concrete highways, there would have been little reason to complain of their conidtion at this time, instead of which it is reported that these roads will have to be reconstructed, using concrete.

Says Cracking Is Universal Experience.

It seems to be a universal experience that concrete pavements, unless heavily reinforced, will crack and even then will frequently do so. The reason for this is its tendency to shrink as it sets up, and then to both expand and contract under ranges of temperature, the expansion, however, never equalling the total contraction. These cracks appear generally within a year after the construction is finished, in the shape of fine hair lines which, under the influence of moisture, traffic, freezing and thawing, rapidly become larger. If these cracks did not break down and extend they would not be so objectionable, but unless promptly protected, they soon ruin a pavement. This is shown very clearly in the Windsor, Ontario, streets which, having roadways averaging about thirty feet, are almost all badly cracked. In the case of the Wayne county roads the roadway width averages less than eighteen feet and over twenty per cent of the tabulated slabs show one or more cracks. It is quite clear therefore, that if cracking is to be eliminated, the concrete must be reinforced and slabs made of small size (not exceeding ten feet square). This, of course, increases the number of joints tremendously and consequently the cost of the construction and maintenance. It is also evident, not only from observation made in Wayne county and Windsor, but in any other places, that if the horse-drawn traffic amounts to three or four hundred vehicles per day, the concrete surface will soon become badly rutted and worn.

It is also believed that the thickness of the concrete as ordinarily constructed should be at least eight inches, especially in view of the fact that the auto trucks carrying heavy loads are becoming increasingly frequent. If this is done and the number of the joints increased, the average cost of construction can hardly be less than $1.60 per square yard, and the maintenance will, undoubtedly, after the first two or three years, amount to the sum of 10c per square yard or the road will fall into absolute ruin. Further, it is plainly evident that coating the surface with tar and sand or the so called "Dolarway" process is absolutely inadequate to protect the roadway any considerable length of time if the traffic is at all large. Some protection is undoubtedly afforded, but this coating must be renewed at least annually to be at all effective. Such an annual renewal, amounting to about ten cents per square yard, simply means that it would have been better in the first place to have put additional money into the first cost of the pavement and secured a more durable product.

Again, if we accept the report of the Wayne County Commission as to the cost of maintenance previous to September 30th, 1912, it is impossible not to come to the conclusion that during the year 1913 the maintenance of these roads has increased from $300 to more than $9,000, and that if such increase has taken place in this one year, it may be expected to increase very rapidly year by year. The Wayne

This Picture Shows the Surface of the 1910 Section of the Fort Road, with Tar Badly Scaled.

county roads are splendid roads but they are so good only because of the thoroughly high class system of maintenance which has been developed.

In an article in the Engineering News of September 26th, 1912, the writer summed up the advantages and disadvantages of concrete pavements, as follows:

Advantages.

1st. Cheap first cost.
2nd. Dustless and sanitary.
3rd. Good appearance if no cracks appear.
4th. Easily cleaned.

Disadvantages.

1st. Liability of cracking.
2nd. Inability to withstand abrasive action.
3rd. Bad appearance after cracking.
4th. If covered with bitumin, high maintenance charges.

In this article it was given as the writer's opinion, that the proper location for such a pavement was:

First: Streets of light traffic (less than one hundred vehicles per day). It is quite possible that this figure is too low, but the writer is inclined not to change the figure, it being understood that the one hundred vehicles per day refers to iron-tired, horse-drawn vehicles.

Second: Another proper location for such a road was stated in the article to be country roads where the value of property would not be affected by cracking, and on which 250 vehicles per day would be considered a heavy traffic. The writer does not wish to modify these conclusions made a year ago. Further investigation has tended to confirm them.

He believes that concrete is not suitable for heavy traffic highways, carrying considerable hauling, business streets, nor for first-class residential streets, especially if the roadway is more than sixteen (16) or eighteen (18) feet wide.

It is almost certain to crack and if a bituminous surface will last several years on it, it would have been better to have put in a plain macadam or a bituminous macadam pavement at a cheaper first cost. On the other hand, if the cost of keeping a concrete highway amounts to more than a cent or two a yard during the first two years, after which it is bound to increase rapidly, it would be better to increase the first cost of the pavement and to provide a more permanent and better wearing surface.

It is unfortunate that no traffic census has been taken on the Wayne county roads. Inquiry was made at the office of the Commission for such information, but they have never obtained it.

Summary.

Practically all cases of concrete pavements on city streets observed by the writer in the past five years have cracked badly before they were two years old. In most cases they are also badly worn.

The same statement is true of Windsor, Ontario.

Of the Wayne county roads observed, thirty-two per cent (32%) of the individual slabs of the 1909 work, twenty-seven per cent (27%) of the 1910 work, fourteen per cent (14%) of the 1911 work, and twenty-one per cent (21%) of the 1912 work is cracking and showing signs of wear.

All streets and roads observed which have a considerable commercial traffic, and which are more than one year old, are wearing badly; as, for example, Gratiot, River and Mack roads, Wayne county, Michigan; Park Street, Windsor, Ontario; Ohio street, Chicago; Green Bay road, Highland Park, Illinois, and many others.

To keep concrete roads and streets in good condition there must be constant maintenance after the first year, and this maintenance will increase materially year by year. This maintenance may consist of tarring cracks and holes or covering the entire surface with tar and sand. If the latter course is followed, the maintenance expense will amount to about ten cents per square yard per year.

To reduce cracking and spawling to an unobjectionable minimum, it is necessary to reinforce the concrete and also to increase the number of expansion joints above those now generally used. These joints should be protected. Every joint, no matter what its character, is another point of weakness in the pavement, and it is a debatable question whether it would not be well to go to the other extreme and eliminate all transverse expansion joints, use longitudinal expansion joints adjoining the curb only, let the cracks come when they will, and after their appearance,—maintain them.

It is not believed that a first-class concrete road can be built for less than $1.60 to $1.75 per square yard, and at this, it would be inferior to a cement grouted brick pavement, or an asphaltic concrete pavement, a bitulithic pavement, or a sheet asphalt pavement, any of which may be constructed at this price, or at a slight increase over these figures. The reason for this is because of its inability to stand abrasion.

Finally, it is not believed the present standard concrete pavement will be satisfactory in Highland Park, either on its business streets or on its high-class residential streets.

The Truth About Wayne Co. Roads

In all probability it has cost SOMEONE $60,000 the past four years to maintain and repair these famous concrete roads. We KNOW they have cost at least $30,000.

Finds Concrete Roads a Failure

DESPLAINES, ILL. OFFICIAL INVESTIGATES WAYNE CO. HIGHWAYS AND DECLARES THEM IMPRACTICABLE

Mr. Hayes, the author of this article, made an independent investigation of the Wayne County Highways and the roads in Windsor, Canada, for the Village Board of Des Plaines, Ill., of which he is a member. His inquiries were made prior to those by Mr. Green, given elsewhere in this journal, and corroborate in general what Mr. Green has said. Not being an engineer, necessarily, Mr. Hayes could not make as thorough an examination and report as his co-investigator, but nevertheless his labors must carry considerable weight.

By William R. Hayes

In the matter of concrete paving I am submitting my conclusions in writing for the reason that I want to be absolutely accurate in the public statements I make in this connection and for the further reason that I want this report to be incorporated in the minutes of this meeting and become a part of the records of the proceedings of this Board, for whatever action is taken I want no misunderstanding in the future as to the position I take and my reasons for doing so.

I spent one day in an examination of concrete roads and streets in Wayne county, Michigan, and in Windsor, Canada, and one day in an examination of brick streets and roads in Cleveland and Cuyahoga county, Ohio.

I had with me a copy of Cement Concrete Age of September, 1912, giving a list of all the Wayne county roads then constructed, date of construction and character and cost of each. Further information was obtained by asking questions of people along the roads.

I made a very careful examination of about 30 miles of the Wayne county concrete roads, including 2 1/5 miles of the Woodward Avenue road; the Grand River road throughout its entire length; about 10 miles of the Michigan Avenue road; and about 4 miles of the Fort Street road. Of all the roads examined, about 3 miles of the Fort Street road, which has been constructed about eight or nine months, was the only section of the concrete roads that has not had to be repaired. All the other roads examined are filled with large cracks—both longitudinal and traverse—which rapidly wears into ruts, and large and small blotches and holes which has made necessary constant repairing. That section of the Grand River road completed last October shows numerous cracks, blotches and holes already repaired. One section of about a mile and a half or two miles of this road went to pieces so badly that it had to be entirely replaced with a new road and the old broken-up concrete is strewn along the side of the road, a mute witness of its utter failure, and the new road that replaced it is already badly cracked and spotted with blotches and holes which have been repaired by filling with coal tar.

On all sections of the roads examined which have been in use more than two years I believe that a safe and conservative estimate of the cracks, holes and blotches that have been repaired would exceed one thousand to the mile of pavement, and many of these defects have been subjected to repeated repairs. There are many places where the wearing out of the pavement has been so rapid that attempts have been made to save it by resurfacing the entire pavement with coal tar mixed with sand or some such preparation.

WILLAM R. HAYES,
Member of the Board of Trustees of Des Plaines, Ill.

The entire section of the Fort Street road, built in the summer of 1910, now scarcely three years of age, costing $1.317 per square yard, constructed 6 inches thick, of 1.2.4 mixture using washed sand and gravel, has been repaired by such resurfacing which has worn off in great patches and blotches, exposing the concrete, worn, rutted and filled with holes underneath.

The much-talked-of improvement in concrete pavement by using Baker patented metal plates for expansion joints is a fake so far as these roads are concerned, for, while it is true that many bad defects in the pavement are at the expansion joints, such defects are small when compared with cracking, blotches and holes that come in the concrete away from the expansion joints and with the utter inability of the concrete to stand the wear of traffic.

An examination of the streets of Windsor, Canada, shows a repetition of what is taking place with the Wayne county roads. Of the several miles of concrete pavement from one year to seven years old there is not one good pavement. We went over street after street ranging in condition from new ones with tar-filled cracks to streets so badly cracked, worn and broken into holes as to render repairing impossible. Citizens of the town very frankly state that their pavements are a shame and disgrace to the town.

There may be somewhere in the country a good concrete road or street but I have never seen one more than two years in use, and there is certainly nothing in the Wayne county roads or Windsor streets that would lead intelligent people to believe that they have produced anything but the failure which experience has shown to be the result of all the attempts for the last 20 years to make concrete a wearing surface for a street or road pavement.

I believe and have evidence to support my belief that the promoters of concrete pavement are afraid of any investigation of concrete paving, and especially of the Wayne County roads, that is not made under their own guidance and supervision.

I believe that the laying of concrete paving in this town would be nothing less than a calamity—a wasting of our people's money and a damage to all our interests, and I am unalterably opposed to buying a pavement that I know will fail, when for practically the same amount of money we can buy a pavement that we know will give us value received for every cent that we expend.

I made a very careful examination of many miles of brick pavements in the city of Cleveland, Ohio, and of brick country road pavements in Cuyahoga county, Ohio, where they have now something over 400 miles of country road paved with brick. We went over the brick pavements in Cleveland, a city of more than 600,000 population; pavements that have been down and in service from five to seventeen years, and upon which there has not been expended one dollar in maintenance. I went over many miles of brick-paved country roadway that had been in service from five to eleven years and upon which there has not been expended one dollar for maintenance.

I also examined an experimental section of concrete laid in one of the roadways of Gordon Park, which was constructed in the fall of last year and which is subjected to practically no traffic except a few automobiles. This pavement was badly cracked and showed every evidence of the beginning of disintegration.

The question of original cost of a pavement is of minor importance when you consider that with the concrete pavement the cost of maintenance during the first eight or ten years of its life would probably exceed the original cost of the pavement. Many of the Wayne county roads were built at a cost in excess of $1.75 per square yard, which is more than a good vitrified brick pavement would cost under the same conditions.

I believe that no intelligent and unprejudiced man could inspect the pavements that I have recently gone over and come to any conclusion other than as I have herein stated, and I challenge any person or persons to produce any facts or evidence to controvert any material statement that I have made in this report.

Clay Products Gain Ten Million Dollars

VALUE OF CLAY PRODUCTS PRODUCED IN THE UNITED STATES IN 1912 WAS $10,000,000 GREATER THAN 1911

AGAIN of ten million dollars in the value of clay products produced in this country during 1912, over the amount produced in 1911, is shown by the report of the United States Geological Survey. This is another record in the industry, worthy of a place near the gain which 1911 made over 1910, which was twelve million—a total gain of $22,000,000 in two years.

In 1912, the production of common brick was 8,555,238,000—nearly 80,000,000 over 1911; this was a gain of nearly ten per cent. At the same time, the average price received was $6.05 per M. as against $5.89 in 1911—a gain of 2.7 per cent in selling price.

Paving brick production, while curtailed somewhat, brought an average price that made the value of the output very close to that of 1911. The figures are: For 1912—production, 911,869,000; valuation, $10,921,575; for 1911—production, 948,758,000; valuation, $11,115,742. This is a gain of 2.2 per cent, so far as selling price is concerned.

Face-brick, exclusive of fancy and ornamental brick, and enamels, gained, so far as the quantity produced was concerned, the production being 814,000,000 in 1912 as against 724,911,000 in 1911. This is a gain of more than 89,000,000 or 12.4 per cent in the number produced. The selling price, however, was less in 1912 than in 1911, by 31c per M. brick, a falling off in price of nearly 2.7 per cent.

Drain-tile production was less in 1912 than in 1911, the valuation for 1912 being $8,010,250—$816,064 less than in 1911. This loss is slightly more than 9 per cent.

Sewer-pipe gained; the value of the 1912 product was $12,147,677—$693,061 more than the value of the 1911 product. This is a gain of more than 6 per cent.

Architectural terra-cotta gained nearly 43 per cent in the value of the material produced in 1912 over that produced in 1911. The 1911 production was valued at $6,017,801, 1912 at $8,580,436—a gain of $2,562,635.

Hollow-tile fireproofing made a gain of more than 26½ per cent, the 1912 valuation being $7,174,148 as against $5,660,172 in 1911.

Roofing-tile, floor-tile and all other tile excepting drain-tile, produced to a valuation of $5,809,495 in 1912, gaining $453,361 over 1911. This is 8½ per cent gain over the preceding year.

Fire-brick and refractories, including fire-clay brick, fire-clay, magnesite, silica and chrome brick, gained $1,802,943 in the value of materials produced, 1912 over 1911. The 1912 production was valued at $17,877,629 and that of 1911 at $16,074,686. This gain is more than 11.3 per cent.

The production of pottery in 1912 was valued at $36,504,564, as against $34,518,560 for 1911. This is a gain of $2,085,604, or more than 6 per cent.

In relative importance, so far as the money value of the materials produced, the various branches of the industry rank as follows:

Common brick	29.97 per cent of the total
Pottery	21.12 per cent of the total
Fire brick and refractories..........	10.35 per cent of the total
Sewer-pipe	7.03 per cent of the total
Paving brick	6.32 per cent of the total
Face-brick, including enameled......	6.19 per cent of the total
Architectural terra-cotta	4.97 per cent of the total
Drain-tile	4.64 per cent of the total
Hollow-tile, fireproofing	4.15 per cent of the total
Roofing-tile, floor-tile, etc..........	3.36 per cent of the total

Paving-brick and drain tile were the only commodities that did not increase in the value of production during 1912, as compared to 1911, the losses, however, being so small a part of the total that the gains in other branches made the total net gain reach the very comfortable figure of $10,000,000.

How Cox Got Into the Game

BEING THE STORY OF A YOUNG MAN WHO FELL HEIR TO A RUN-DOWN CLAY PLANT

By Iverson C. Wells

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MY cries for help and the shot that went with such deadly effect into poor Sawyer's body drew a number of the neighbors to the scene of the tragedy. We picked up the inanimate form and carried it into the house. For the first few moments we anxiously watched the physician as he vainly endeavored to restore some life to the old superintendent, and none of us thought of the slayer who must have made good his escape.

"Who shot him?" someone asked me in a subdued whisper. The words acted as a shock to me. I thought of Simpson's threats that afternoon following the quarrel and fight in which the young ceramist had been felled by a blow that would have killed an ordinary man.

"I—I—don't know," I managed to stammer.

"We must not let him escape!" someone cried and three or four rushed to the door and out into the darkness.

"Get the city marshal and the sheriff," one of the neighbors suggested. Instantly there was a second scramble and the house was deserted save for my mother, the physician, myself and one of the women who had come at the first cry of alarm.

"He was shot from the back," calmly said the physician, arising from his examination of the body. "Whoever his assailant was he was cowardly."

I stood as in a trance. It was hard for me to collect my thoughts. Could it be possible—?

The door to the room opened and Young Simpson entered. I turned and saw him. There was a look of wonderment in his eyes and a calmness of demeanor that almost threw me off my guard for the moment.

"I heard there was an accident—" he began but I interrupted him.

"My God, boy, do not come in here!" I exclaimed, and seizing him by the shoulder I thrust him through the door and out into the darkness of the night. Following him I rushed him around the corner of the house and to the rear.

"For God's sake run—they will be here in a minute!"

Simpson threw aside my grasp and looking at me quietly answered:

"Why, what is the matter—?"

"Matter? Sawyer—Sawyer! Get away quick or they will have you—"

I started to push him out into the night but he resisted me firmly and in the light that came from a window I saw a look of surprise on his face.

"Mr. Cox, I heard that some sort of accident had happened over at your place—I came to see—"

He was unable to finish the sentence for I heard approaching steps and without further ceremony hurled him forward.

"Run! It's your only chance!" I cried and I turned to face the officers. The sheriff and city marshal with two or three deputies were entering the house. I met them at the door.

"Mr. Cox, I understand there has been a murder committed," said Sheriff Black. "Tell us what you know as briefly as possible."

I told them of the shot I heard and of seeing someone running away from the scene of the tragedy as I looked out of the door. I also told them of picking up Sawyer and of his failure to make any accusations before he gasped his last breath.

"Could you distinguish the form of the fleeing figure?"

I hesitated a moment. It was my purpose to give Simpson as much time as possible to escape.

"No," I said, "it was too dark for that. I could tell it was the figure of a man—that was all."

"Which direction did he go?"

"Across the vacant lot next door."

If I could have held back the words I would have done so for I felt that I was sending Simpson to the gallows by what I had said.

"Which direction?" persisted the officer.

I hesitated. It was dark—perhaps too dark to see. Why not say so? I must give the boy a chance. He had been provoked beyond endurance—I wanted to save him. I knew it was wrong, but—

"Couldn't you tell which way he ran?" persisted the sheriff. "We are losing time. We might overtake him."

"I—I couldn't tell—I—I—it was dark. I saw him running—that is all!"

I dropped into a chair, the perspiration standing on my forehead like beads. I felt as guilty as I believed Young Simpson to be.

"Come, boys! We have lost too much time now."

The next minute Sheriff Black and his deputies had started for the door. As they swung it open someone blocked the way.

"What's the trouble, Mr. Black?"

I looked up startled. It was Simpson. His voice was as calm as if he had been asking some laborer around the plant a similar question about the machines over which he had charge.

"Someone shot Old Sawyer," the sheriff answered and started for the door again.

"Sawyer shot!"

I will never forget the look that was on his face, and for the moment I felt I had been wrongly accusing him even if it was all in my own mind.

"Yes, and dead," one of the officers added.

Simpson startled. I vainly motioned him to keep quiet.

"Dead? Dead?" The next moment he had turned to me. "And that was why you wished me to run—?"

Sheriff Black wheeled suddenly and scrutinized Simpson's face and then looked at me.

"Does this boy know anything?" he asked roughly.

My heart sank. I turned appealingly to Simpson.

"Hurry up! We're losing valuable time."

"You will have to let him answer that for himself," I replied, looking him quietly in the face.

"What do you know, Simpson?" the sheriff asked.

"Nothing, absolutely nothing! I did not know he was even shot, least of all dead, until just now."

Simpson came over to me and holding out his hands he said with considerable feeling:

"I am awfully sorry to hear this, for Old Sawyer was a—"

He never got to complete his sentence for one of the men at the plant who entered the room just behind Simpson had whispered something to one of the officers.

"This fellow says Simpson had a fight with Sawyer this afternoon and that he heard him threaten him." He thrust the workman—a man by the name of Haskell—forward.

Apparently for the first time it dawned upon Simpson the predicament he was in, for he looked at me with a startled gaze and then to Sheriff Black.

"What about this, Simpson?" Black asked him.

"It is true—what he has said is true, but so help me God, I know nothing about this affair."

"Haskell, tell what you know about the fight and the threat."

The workman briefly related the incident of that afternoon, not omitting one single detail.

"What was Simpson's threat?"

"He said he would make Sawyer eat his words if it took him ten years to do it."

"Did you see this fight and is this story right?" asked Black of me. I nodded my head in approval, but did it reluctantly.

"I guess, Simpson, we had better detain you a while. Here, Collins, take charge of this fellow. Don't lock him up. Just keep watch over him until morning. I am going out to scour the country around."

"Cheer up, Mr. Cox, they've got nothing on me," assured Simpson as he turned to go with the officer. "It's just a case of circumstantial evidence."

And then, as I grasped his hand and he saw my look of despair:

"My God! You don't believe I really did it?"

"Simpson, keep your tongue—say nothing and trust to me," I whispered. "I will spend every cent I have to help you out of this."

The next moment Simpson passed through the door with the officer holding his arm and leading the way.

(The Continuation of this Story will be Found in the Oct. 21 Issue.)

Attractive Display at Seattle Manufacturers' Fair

The exhibit of the Denny-Renton Clay & Coal Company, at the Seattle (Wash.) Manufacturers' and Merchants' Fair, held during August, received much favorable comment, constructed as it was of materials which do not ordinarily lend themselves to artistic treatment.

The floor of the exhibit was paved with 8 in. x 8 in. x 1½ in. floor tile, laid diagonally over the entire area. On three sides of the exhibit a balustrade was constructed with a paving brick base, using two and four way conduit tile for the balusters, and vitrified wall coping for the rail.

At each side of the main entrance a brick pier was constructed, surmounted by two vases. At the rear end of the balustrade wall two piers were constructed—one of building pavers, and the other of building paver blocks. A matte glaze terra cotta cap in polychrome of very light cream with a light blue background made a very pleasing contrast to the rich red color of these piers, a wall flower box of red terra cotta being placed on top of the piers. The rear wall was constructed of partition tile, 3 in., 4 in., 6 in., 8 in., and 12 in. blocks being laid up in a novel and attractive manner.

The main feature of the exhibit, apart from the items already mentioned, was two paving block slabs, five blocks in length and five blocks wide, grouted with a 1-2 mixture, placed on two 30 in. vitrified salt glazed sewer pipes, 32 in. between centers on a 2 in. cleat, on which was placed an 8 in. I-beam, which in turn supported a 36 in. sewer pipe which weighed 1,280 pounds. This was a demonstration of the tensile strength of these slabs and attracted much attention.

The remainder of the exhibit was made up of 24 in., 18 in., 12 in., and 8 in. sewer pipe in 2 and 3 foot lengths. At the rear entrance of the exhibit two Indian flower pots 24 ins. in diameter were placed on two 15 in. sewer pipes.

A pleasing arrangement of flowers and foliage which harmonized with the general color scheme added much to the attractiveness of this display.

LARGE ORDER FOR DUNN BRICK.

Because of the remarkable increase in the business of the company, the "Dunn" brick plant at Erie, Pa., which is operated by the Henry Shenk Company, will double its capacity. The plant at present has a production of about ten million annually. The Lake Shore Railroad recently placed an order for a million brick with this concern which will be used for construction work at Toledo, Ohio. The increased production will equal fifteen million a year.

Statement of the ownership, management, circulation, etc., of "Brick & Clay Record," published semi-monthly at Chicago, Ill., required by the Act of August 24, 1912.

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Sherman Leach, Chicago, Ill.
C. L. Rorick, Chicago, Ill.
L. W. James, Chicago, Ill.

Known bondholders, mortgagees, and other security holders, holding 1 per cent or more of total amount of bonds, mortgages, or other securities: None.

C. L. RORICK,
Business Manager.

Sworn to and subscribed before me this 20th day of Sept., 1913.

F. J. SAUER,
Notary Public.

[Seal.]

My commission expires Sept. 17, 1916.)

Selling Brick

SALESMANSHIP AND ITS APPLICATION BY THE MANUFACTURER OF BURNED CLAY PRODUCTS

By Iverson C. Wells

WITHOUT knowledge and faith in the product you are seeking to sell why seek to sell? Unless you have knowledge of your wares you cannot have FAITH and WITHOUT faith you cannot INSPIRE confidence in your prospective customer. Working out the rest of the problem in the same logical way, is it not assinine to attempt to interest a customer unless you can get his CONFIDENCE in not only YOURSELF but what you are TRYING TO BARTER to him?

Too many salesmen go off half-cocked. They get a superficial acquaintance with their wares and imagine it is sufficient for all purposes. Then they wonder why they cannot interest a HARD customer.

The salesman who really understands every feature of what he is trying to sell is never at loss for something interesting to present to his customer. A man well-versed in all the arts and sciences of salesmanship and equipped with a thorough knowledge of what he has to sell goes about his work with an assurance that is contagious.

There is nothing like CONFIDENCE to move a hard-shelled prospect. Get a man's confidence—get him to feel that what you are saying is born of KNOWLEDGE, and you get his ear. He is EAGER to listen—he is WILLING to learn. And any man who will LISTEN WITH INTEREST to a salesman is on the road to PATRONIZE him.

A SUCCESSFUL brickmaker from Minnesota was in the office of this journal a few days ago. This man owns two profitable brick plants of the modern type and is preparing to build a third plant that the last of his three sons may have a business of his own, for he himself practically has retired.

I happened to know something about the methods of this manufacturer, but I wanted to see to what particular faculty or qualification he attributed his success. Like most men who do things this brickmaker was at a loss to say just why he had succeeded.

As a matter of fact his success has been made through his ability to SELL and his ability to sell was possible because he KNEW his subject thoroughly.

Now this particular brickmaker knew little about brickmaking when he entered into the business. Before he came to this country he was a bricklayer. He had worked at the trade for a number of years. He decided to come to America where opportunity was greater. He settled in Minnesota and plied his trade. It was not long before he was in the contracting business building brick houses for other people and employing bricklayers to do the work for him.

It dawned upon him one day that it would materially help him if he knew something about architecture. He was a busy man—past the school day age, but this did not deter him. He took up a correspondence school course and he LEARNED architecture. Thus equipped he was able to get contracts because he KNEW how to handle a job intelligently.

A time came when he reached the point where he felt he was not getting his brick cheap enough. He had a big contracting business and he was using a large quantity of brick. He decided to make brick. He has been making them ever since, and no longer is in the contracting business, only as it applies to his manufacturing.

This man knows HOW to sell brick. He knows it from the bricklayer's viewpoint. He knows it from the contractor's standpoint and he knows it from the architect's way of thinking. In addition to this he knows it from the manufacturer's standpoint.

Those that recall his days as a bricklayer say he was a good bricklayer. Those that knew him as a contractor declare he was a good contractor. Those that know him as a brickmaker say he is a good brickmaker and point to the many self-planned improvements he has installed in his plants to improve his product and to cheapen the production.

This man is not a myth. He is a man of flesh and blood and is none other than A. S. Ochs of Springfield, Minn.

IT may not be necessary to go through the bricklayer apprenticeship and through the contractor's experience and it may not be necessary to take up a course of architec[illegible] become a good salesman. There are good salesmen, of course, who never have done any one of these things. It is true, however, that each of these experiences will give added confidence and increased knowledge to anyone and these are things that make good salesmen.

Mr. Ochs has made the brick and tile for and built more silos probably than any one brickmaker in his state. He has a market that extends two hundred miles from his plant for his brick, for his hollow ware and for all the other products he manufactures.

The only reason he was able to build up this successful business was because he could go to a prospective customer, sit down with him and talk INTELLIGENTLY to him.

Being somewhat a reader of human nature I would say that Mr. Ochs is only an AVERAGE man. There is nothing striking about his personality except the impression he gives that he knows what he is talking about.

His case proves that average men—men who are not especially brilliant as salesmen are supposed to be—CAN make good salesmen if they will only equip themselves.

The thing to do is to equip yourself.

WITH this, the tenth of the articles in the series, I close my talks on salesmanship. It is possible that what has been written has borne little fruit, although an occasional letter from some reader or a word dropped here and there encourages me to believe that somewhere a suggestion has been dropped which has started a struggling salesman on the right road to scientific salesmanship.

If this is true my efforts have been rewarded amply. We all are young enough to learn and even the smallest and most insignificant of us can teach SOMETHING to SOMEONE.

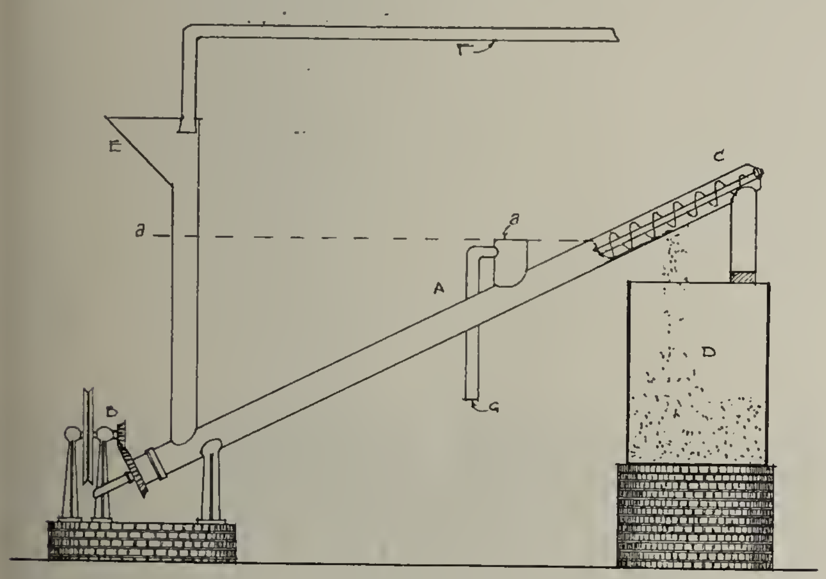
Questions and Answers

A DEPARTMENT FOR THE SOLUTION
OF THE KNOTTY PROBLEMS CONFRONTING THE CLAY WORKER

This department was inaugurated to be of material benefit to the readers of "Brick and Clay Record" and no charge is made for the service given. The advice of the world's recognized authorities in ceramics is offered to clayworkers who are invited to avail themselves of the opportunity to have their problems solved here. Should a reply be desired by letter enclose a stamped and addressed envelope for reply.

Wants Clay Washing Machine.

200. *England—I would like information as to where the automatic clay washing machine, sketch of which is herewith given, is made. According to the description which I have the operation is as follows: The tubes E and A form a "U" in which the water level is kept constantly at a a. In the tube A a spiral worm, C, is rotated which serves to agitate the materials fed in at E, and to thoroughly disseminate it through the water or other liquid fed in by means of the pipe F. The residue, or coarse material, leaves the machine by way of an opening and descends in the receiver D. The liquid leaves the machine by way of the pipe G, connected to the dome a. By altering the angle of inclination of the tube, the speed of rotating the worm, or of the quantity of water, the degree of separation can be varied.*



There are several clay washing devices on the American market, any of which will answer, undoubtedly, our English cousin's requirements. We refer the correspondent to the advertising pages of this journal, where he may find the names of a number of brick washing concerns. As to this particular type of clay washer, perhaps some of our readers will come to his rescue.

Drainage of Alkali Lands.

196. *Colorado—Can you tell us of any books or papers on the drainage of alkali lands caused by seepage. Does the Government publish anything that would be of value?*

Inquiry should be made to the U. S. Geological Survey, Department of the Interior, Washington, D. C., which probably has issued bulletins on the subject, and if not, will be in a position to state by whom such bulletins have been issued. "Brick & Clay Record" has no book that treats on the subject in question.

Wants Names of Flint Pebble Users and Machinery.

193. *Wisconsin—Where can I obtain a list of the names of users of flint pebbles and also a list of manufacturers of machinery pertaining to this part of the clayworking industry? I understand that the principal users of these pebbles are the grinders of feldspar for pottery purposes and for the manufacture of Portland cement.*

This correspondent's name will be furnished on request.

Wants Addresses of Brick Manufacturers.

195. *Missouri—If you can furnish us with the names of firms who handle face and common brick, it will be appreciated. The information is wanted for a new I. O. O. F. building to be erected in Stoutsville, Mo. Please address Chester Scobee, Stoutsville, Mo.*

The correspondent's address is given so that "Brick & Clay Record" readers will have an opportunity of getting in touch with the prospect without further delay.

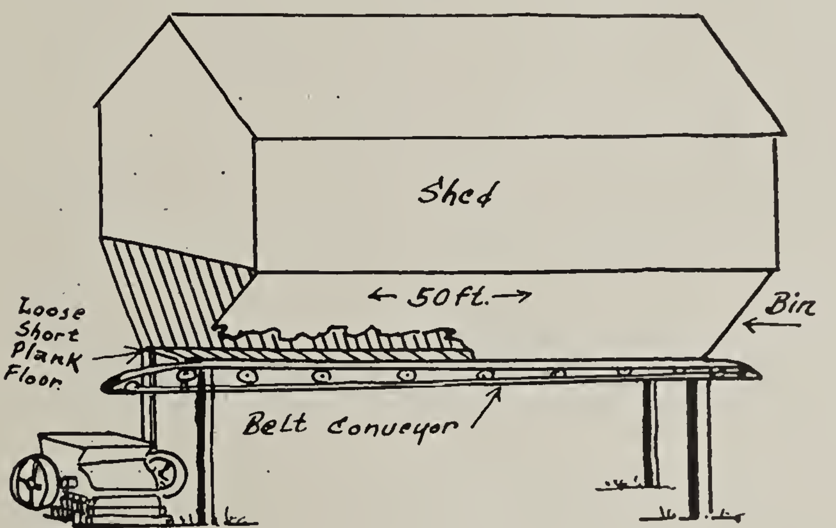
Wants Common Dark Red Building Brick.

197. *New York—We desire to take on a line of common building brick of a dark red color, and have seen a brick made in Ohio that is just about what we could use. We do not, however, know the name of the manufacturer.*

In order that our correspondent's best interests may be served without delay, we publish his name. Manufacturers of red brick that believe their product can be handled successfully at Palmyra, New York, will do well to communicate direct with C. A. Sessions & Son, dealers in building supplies.

Wants Storage System Plans.

183. *Michigan—We have a very senitive clay. It is in a deep bank and well drained, but the slightest rain makes it too soft and we lose a great deal of time. I think we will build a storage shed that will hold a week's supply of clay. Where can I get plan drawings for the same or when can I buy such an apparatus. I am submitting a sketch showing my idea.*



Weathered clay makes better brick or tile, whether the problem of wet clay exists or not and many of the more progressive plants have storage bins such as is desired by our correspondent. Any of the advertisers in "Brick & Clay Record" who make a specialty of conveyor and storage systems should be in a position to submit plans and full equipment. These systems may be simple or elaborate as the requirements demand. If plans only are required, why not write to one of the several high class engineering firms whose advertisements appear in this journal?

Wants System of Control for Submerged Cylinders.

194. *France—From the point of economy in motion and development of energy, which is the best system of control for submerged cylinders: 1. Direct control with loose pulley, as with disintegrators; 2. By gearings (a) without intermediary transmission; (b) with intermediary transmission.*

Can any of the readers of this department give a satisfactory answer to this correspondent?

To Eliminate Lime Pebbles.

In the March 1 issue of "Brick & Clay Record" a correspondent (63. California) asked what was the best way of eliminating lime pebbles in his clay. Recently, an explanation was sent this office by Otto Pommer, of Quebec, Canada, who has written other articles for this department. The suggestions were submitted to an experienced American brickmaker, whom we knew had gone through a long series of experiments with the object of eliminating the lime pebbles from his shale. He writes us as follows:

> I think that Mr. Pommer is correct in his description of the chemical action of lime pebbles, and two of his suggested methods would doubtless be satisfactory, viz: To wash the material when the lime is in large enough pebbles to be removed by washing; or by increasing the temperature of burning the brick, provided the material will stand the higher temperature and that the resulting colors would be satisfactory.
>
> The other two methods I do not believe feasible. I have found it impossible to grind pebbles fine enough to prevent their popping. Dipping the brick in water after leaving the kilns would only result in bringing the pebbles out quicker. I would suggest that the most practical way to eliminate trouble with lime pebbles is to keep them out of the material when it is loaded in the pit. In nearly all shales and many clays the pebbles are found not in the material itself, but in the overburden. Therefore, by careful stripping, and using muriatic acid to show effervescence when the pebbles are present, it is possible to practically eliminate them.

Mr. Pommer's article follows:

The existence of lime (carbonate of lime) in clays or shale used for brickmaking is a source of constant trouble and it is up to every plant which has the trouble to find out which remedy will work and suit the conditions best.

Carbonate of lime is often found in clays. Sometimes it is very fine in which case it does not do harm but acts as a flux, and in other cases it appears in the form of lime pebbles in sizes that vary from that of a nut down to a head of a pin. When burning, the lime loses the carbonic acid, leaving oxide of calcium, known as unslacked lime, which absorbs the water from the air, forming hydrate of lime, known as slacked lime. In this stage the lime increases its volumina, forming cracks in the brick which grow bigger until pieces fall off from the brick and cause the brick to burst. Looking at those pieces the slacked lime is easily seen. There are four ways known which might help.

1. *To Wash the Material.* This is the safest but most expensive way. To do this large basins and a large amount of water is necessary. If the clay contains lime in small amounts and fine particles only the burning color of the products will be very much improved and the prices obtained might pay the expenses of such washing.

2. *To Reduce the Size of Lime Pebbles by Crushing.* The crushing must be done very fine by means of two or three smooth crushing rollers, the rollers spaced from one-fourth to one-sixteenth inch apart, one roller on top of the other. These rollers must be kept in a very good order, so that no bigger sizes of lime pebbles can pass. The pebbles should be crushed fine enough to handle the material. They should have two smooth, large rollers and should not be of the disintegrator type, as those would not do. The disintegrator mostly used has a tearing motion, whereas the rollers I mean have a crushing motion.

3. *Dipping the Brick in Water* as soon as they are drawn from the kiln. In this way the lime is suddenly soaked and drowned, the pores of the brick are filled with lime-milk and thus closed up with lime, in this way keeping away the air from the inner brick, preventing still unsoaked lime pebbles from being soaked and so harming the brick.

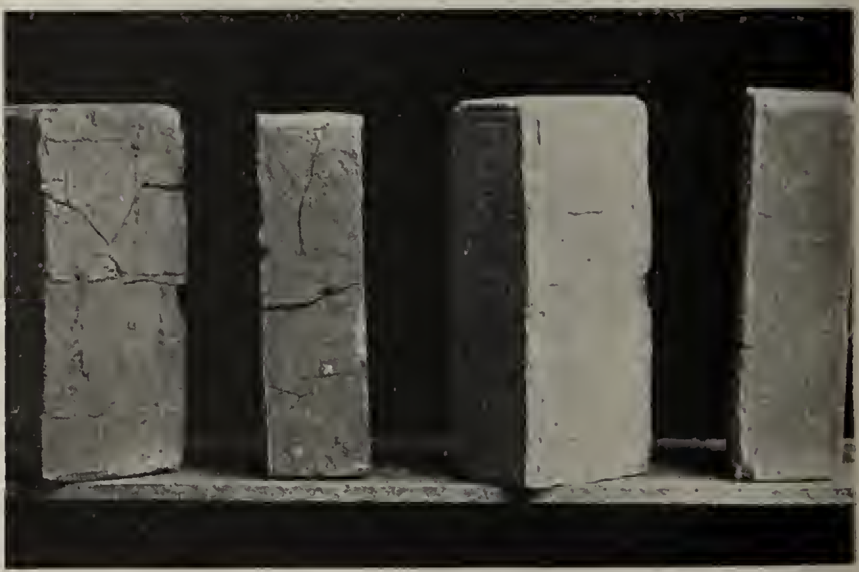
4. *The last way would be to overburn the lime pebbles.* This means to burn the brick at as high a temperature as the lime will stand, thus burning the lime dead.

To find out which way will prove the best, I suggest the following tests:

Test No. 1. Wash enough clay to make 5-10 hand molded brick over a 900 mesh sieve (900 mesh on 1 square centimeter). All the material going through the sieve used to make the brick, burn those.

Test No. 2. Crush the lime pebbles of your materials to 4-6 different sizes and add those different sizes to your material which must previously be washed or finely screened, so that there are no other lime pebbles in the material as added of the one crushed to different sizes. After those test brick are burnt and exposed to the air, it is quickly seen to which fineness you must reduce the lime pebbles so that they do no more harm to the brick.

Test No. 3. Place about 50 brick of your regular make for 5 minutes entirely under water until no more air is coming to the water surface, then expose the brick to the air and after a few days you will see if this helps. To do this with little expense wheel barrows with the brick from the kiln are placed on a double elevator, one side of the elevator going down in the water, the other side coming up, so one wheel barrow is always under water.



Test No. 4. Try to burn your brick with more heat. There are some limestones which are burnt dead by certain temperatures. This way is the easiest. I met the lime trouble at a plant at Detroit, Minn., where the lime pebbles were in the worst form. The plant was making soft mud brick and used field kilns. When starting at this plant I installed one crusher with smooth rollers, crushing the pebbles just to a minimum size. I also increased the temperature of the burning and got excellent results, the lime troubles having disappeared. The photos show two brick at the left in which the lime pebbles had not been removed, and before the rollers were installed and the burning temperature raised: the two brick at the right are the product obtained after the installation of these improvements.

The Superintendent

A DEPARTMENT CONDUCTED FOR THE INTERCHANGE OF IDEAS IN METHODS OF MANUFACTURE

Contributions from our readers are solicited for this department on any subject pertaining to the manufacturing end of the industry. Short cuts and labor-saving suggestions are particularly sought. Address all communications to the Editor of the Superintendent Department. Brick and Clay Record, Chicago.

FORCE AND MOTION

By C. R. Trowbridge.

(of the Dodge Manufacturing Company.)

In the discussion of the performance of work by mechanical power the engineer finds himself facing the question of accomplishing two things: one, the production of sufficient force to overcome the resistance opposed to him; the other, the imparting to this force of the motion necessary to keep up continuous action. A force of one hundred pounds can do no work until it is given a velocity, until it is made to travel a given number of feet per second, until it is converted into foot-pounds.

A natural consequence of these facts is that it matters but little, at least theoretically, which of the two elements is the larger; we may have a few pounds moving very rapidly, or a larger force moving proportionally slower and the amount of power developed will be the same. The whole history of engineering has shown the development from the heavy, slow moving force to the lighter, high speed combination, a natural consequence of the improvement in construction possibilities.

Thus, in the earlier days of mill construction it was thought possible to transmit power only by the heavy, slow-moving shafting and gearing, and the use of belts and pulleys was considered trifling and adapted only to very light machinery. The moderate frictional hold of the belt upon the pulley and the corresponding lower strength of the belt, as compared with the ponderous cog-wheels, led to such conclusions until it was realized that the greatly increased speed of the belt enables ample power to be transmitted; it was the same combination of force and motion, and if the force was smaller and the motion was faster, the power transmitted was as great in the one case as in the other. When, still later, it was proposed to use rope driving for many purposes the same misconception stood in the way, and the old-time machinist, who laughed at the idea of attempting to drive his lathe with a "piece of string" opened his eyes when he saw that the swift-running rope could pull through a cut which had caused the old belt to leave the pulley many a time. Today these things are better undersood, and with the development of the science of the transmission engineerer it has been found possible to meet almost every demand, and to deliver power to any point where it is needed with certainty and efficiency. The result is a rapidly extending use of power for many purposes for which it was formerly considered inapplicable. In every part of the shop, power is readily attainable, whether delivered by belt, rope or electric wire. Men use their brains to direct their hands in the guidance of power-driven tools for nearly every operation, with a resulting increase in capacity and efficiency beyond estimate. What the development of modern railway transportation has been to the expansion of commerce, the increase of power transmission facilities has been in the manufacturing industries. The development of mechanical force would avail nothing if with it there had not come a similar development of appliances for providing the motion necessary to complete the production and delivery of power.

It is never safe to predict the limitations of any department of industry, but one has only to look back at what has been accomplished in the comparatively few years since really effective power transmission has been accomplished to realize the possibilities in the immediate future. There is no reason why human labor should be called on for the performance of any severe effort, since there may always be mechanical power available and convenient. The idea that there is a certain dignity essential inherent in the exertion of muscular effort was once considered evident, although with it went the belief that the burden of labor was instituted as a punishment. If the latter view be accepted, man is working out his deliverance through the efforts of the engineer of power and transmission.

Saves $4,000 Yearly by Device.

The Westport Brick Company of Baltimore reports an annual saving of $4,000 by the installation of a clay cleaner. The labor of three men at $1.75 a day was saved and a granulator, a disintegrator and a rotary dryer were eliminated, the clay going direct to the dry pan. A ton of coal per day at a cost of $3.40 per ton is included in the figures and only 15 horse power is now required where 175 was necessary formerly. The actual saving in labor and coal alone is $2,162.50. The Westport clay is plastic and is burned into pavers.

May Cause Lamination.

It is customary to take the tailings from the off-bearing belt direct to the pug mill, but this is questioned by some clayworkers who maintain that unless the tailings enter rather far back they are not apt to become thoroughly mixed with the rest of the clay before entering the augur. A core will be formed in this case. It is argued that the tailings should be permitted to dry and go first into the dry pan.

Makes Electric Power from Waste Heat.

West Hartlepool is said to be the only municipalty in England to produce electricity by means of waste heat. Two turbo-generators, each of 1,500 kw., will be driven by exhaust steam from the furnace-blowing engines of an iron company, adjacent to whose works the power station is to be built. In return for the exhaust steam, which hitherto was going to waste, the iron company will receive all the electric current it requires.

Confines Tailings from Wire Cutter

A narrow strip or board bolted to the cutter and allowed to stand up a few inches above the table will keep the tailings from flying out into the room.

Common Brick

Common brick manufacturers of the Hudson river district, supplying the New York metropolitan district with its basic building material, were exonerated of any attempt to practice trust methods or to forcibly control the Eastern market when the Grand Jury summarily dismissed the case against their selling agent, the Greater New York Brick Company, without comment, on the afternoon of September 18th. It was a triumph for the principle of self preservation among manufacturers against the power of the dealer to dictate prices.

For more than a year Francis M. Weeks, a New York builder, has stood sponsor for the charge that the company formed by Senator John B. Rose and Frank M. Patterson, counsel, was organized and did business in violation of the Donnelly act, Sections 340 and 341 of the New York State business law. This law reads as follows:

> Every contract, agreement, arrangement or combination whereby a monopoly in the manufacture, production or sale, in this state (New York) of any article or commodity in common use is, or may be created, established or maintained, or whereby competition in this state (New York) in the supply or price of any such article or commodity is, or may be restrained or prevented, or whereby, for the purpose of creating, establishing or maintaining a monopoly within this state, of the manufacture, production or sale, of any such article or commodity, the free pursuit in this state (New York) of any lawful business, trade or occupation, is or may be restricted or prevented, is hereby declared to be against public policy, illegal and void.
>
> Section 341 says: The penalty—Every person or corporation, or any officer or agent thereof, who shall make or attempt to make, or enter into any such contract, agreement, arrangement or combination, or who within this state (New York) shall do any act pursuant thereto, or in, toward or for the consumation thereof, wherever the same may have been made, is guilty of a misdemeanor, and on conviction thereof shall, if a natural person, be punished by a fine not exceeding $5,000, or by imprisonment for not longer than one year, or both such fine or imprisonment; and if a corporation, by fine of not exceeding $5,000.

Charles S. Whitman.

An attempt was made to prosecute the company shortly after its organization in the summer of 1911, through the Attorney General's office at Albany, but since the alleged offense was committed in New York county, the Attorney General dismissed the case. The complainants then filed a complaint before District Attorney Charles S. Whitman and for more than a year *ex parte* proceedings were conducted before Magistrate John J. Freschi to determine it sufficient evidence had been adduced to warrant his entertaining a complaint against the company. On May 16, 1913, Magistrate Freschi decided to issue a summons against the Greater New York Brick Company and a warrant against its officers and directors. An adjournment was taken shortly after that until September 29th, of this year, but early this month the evidence was laid before the Grand Jury. It took less than two weeks for the Grand Jury to find that the evidence did not warrant indictment and the case was thrown out.

While all this litigation was in progress the Hudson river brick market was the victim of widespread manipulation. The market for Hudson commons not only was depressed, but when it became known that the case had actually been handed over to the Grand Jury, prices sagged until as low as $5.50 was reached for fairly good brick. Architects, having prospective building operations on their boards, became so timid about their prospects for getting deliveries on brick, that in more than one instance building operations were deferred. It had a very important influence in crippling building construction in New York. It also was a contributing factor in forcing brick manufacturers to shut down their plants from thirty to sixty days ahead of the usual closing date.

The complainant, Francis D. C. Weeks & Son, of 1123 D. C. Weeks & Son, 1123 Broadway, New York city, alleged that discrimination had been shown by the Greater New York Brick Company in refusing to sell brick to contractors who had purchased brick elsewhere. The defendant company entered a vigorous denial of this allegation and showed that even in perfecting its organization a great deal of emphasis had been laid upon the intent of all concerned to keep well within the law. Its counsel testified that he had refused to have anything to do with any organization that did not intend at the outset to operate within the provisions of the antimonopoly law and that he had been careful to guide the whole purpose of the plan and scope of the brick selling company in accordance with the act.

One thing in particular that has appealed to complainant and defendant alike all during the proceedings of this case, in the justice and fairness that District Attorney Whitman has shown to all business interests. Advocates of building materials other than burned clay might have been successful in befogging the issue before the Prosecutor of the county.

Powerful interests that sought to manipulate the market during the contest in the courts were unable to complicate the singleness of purpose of the man who was as a stone wall to the corruptionists of the city and county during the recent police scandals. The District Attorney held to one purpose, uninfluenced by fear or favor, namely, to determine whether the evidence brought forth by the complainants had sufficient weight in fact to warrant prosecution, and because of this attitude he looms large upon the horizon in the respect and esteem

of business men as a level headed, fair minded official.

A new era seems to have dawned for common brick in the New York market as the result of this verdict. First of all, it means that the Eastern brickmaker now seems assured of a chance to sell his brick above cost price. At the same time the brickmakers up the river who frequently become nervous when demand suddenly picks up or drops have had their warning against arbitrarily setting their price upon their commodity. Summed up in a nutshell, the action of the Grand Jury may be interpreted as saying to each brick producer:

"You have acted within the law and we have not found sufficient cause for chastisement, but you must keep your prices subject to supply and demand."

Apparently the brick manufacturers have taken the intimation to heart. Prices remained steady after the decision, despite the phenomenal buying, probably because past experience has taught that there is always a lull after a spurt, particularly when building construction is low in volume. It also indicates that the feeling of relief that the brickmakers are experiencing, is not going to be marred by undue exultation and consequent flagrant use of power. They realize that, under less favorable conditions, the issue might have been very different.

MELVILLE W. MIX RENOMINATED.

Dodge Manufacturing Company's President Leads Democratic Ticket in Mishawaka, Indiana.

Melville W. Mix, president of the Dodge Manufacturing Company, widely known throughout the manufacturing world, has been nominated by the Democrats of his home city, Mishawaka, Ind., for Mayor. This is the third time that such an honor has come to Mr. Mix, he having been selected twice before as the Democratic standard bearer of Mishawaka, each time being elected by a large majority over his Republican opponent.

Mr. Mix was first elected Mayor shortly after the incorporation of Mishawaka and his first administration brought the city from one of small proportions to a widely known municipality of some 15,000 people. He has been instrumental in building up the town as a manufacturing center, a city of homes, a city of parks, a city of lights, and power, paved streets, and all of the modern conveniences that makes life worth while in any striving community.

Mr. Mix, who is popular throughout the Hoosier state, has often been mentioned for Governor on the Democratic ticket, and has twice been offered a nomination for Congress, but refrained from accepting these responsibilities owing to his heavy business interests.

Outside of being president of the Dodge Manufacturing Company, Mr. Mix is at the head of the National Veneer Products Company, a large concern making trunks, traveling bags and leather novelties, runs a hotel, a bank, is a director in a number of other South Bend and Mishawaka industries, and is just now acting as receiver of the Amples Motor Car Company; he is president of the Manufacturers' Association of Indiana, and has held many positions of trust in the National Association of Manufacturers, efficiency societies and other organizations.

Fire caused a loss of more than $100,000 at the plant of the Columbia Tile Company, Grafton, West Va. The plant was literally wiped out.

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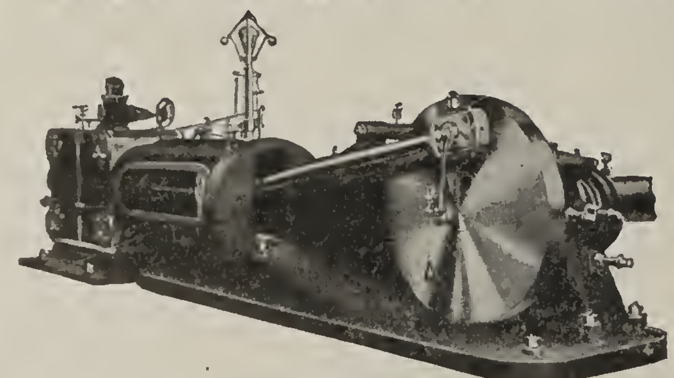

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Manufacturers of materials that enter into building construction and who, as a consequence, are interested in the specification of their goods by architects, will do well to heed the fast growing demand on the part of professional men for a sharp division of trade literature—the elimination of fine writing, endorsements, "puffs" and other favorite lines of the advertising writer, so far as the literature that is designed for architects is concerned, and the amplification of real information, diagrams, technical descriptions and plans for use, the whole subjected to the acid test of "will this be useful to a man who intends to find out all there is about this material?" If trade literature does not shape up to this specification, what right has it to ask that an architect litter his files with it? The picture of a man in a smoking jacket, toasting his slippered feet at a radiator, while frost forms on the window and snow flies without, is all right for the layman, but the architect wants to know how much space the radiator occupies, what its radiating surface is, how connections are made and what pressure of steam is required to bring it up to its full efficiency. Technical booklets, technically correct, that will serve as tabulated and conveniently collected information for the architect, will be preserved and used long after the bills for their distribution are paid and forgotten. Booklets that simply tell how good the material is and who has used it (a mental club that the architect resents) frequently find their way into the wastepaper basket before more than the opening paragraphs are read.

MACHINERY MAN MEETS PAINFUL ACCIDENT.

Harry S. Hopkins, treasurer of the Chicago Brick Machinery Company, was run over by an automobile, September 19, and is slowly recovering from his injuries. The accident occurred at Jackson Boulevard and State Street, Chicago, and was due to a seeming defect in the traffic regulations of the city. The policeman in charge of the crossing had signalled vehicles going north and south, to go ahead, which stopped traffic bound east and west; a "speed boy," however, who was coming from the south, wanted to turn west, and, in doing so, ran into and over Mr. Hopkins, who was walking south. Fortunately, no bones were broken, but several stitches had to be taken in an ugly scalp wound, and for a time, considerable anxiety was felt as to possible internal injuries. A host of friends in the brick trade will be glad to know that Mr. Hopkins is on the road to recovery.

A. F. Daunoy, formerly manager of the Ballette-LaGrange Brick Company, at Lake Charles, La., is trying to interest capital in Beaumont, Tex., with the object of starting a brick plant at the latter named place. He states that he has found excellent clay near Beaumont and proposes to organize a company with a capitalization of $30,000.

The Port Arthur (Tex.) Board of Trade has submitted a plan to the U. S. government, contemplating the use of the material in a spoil bank on which the authorities have piled the dredgings from the canal. The plan includes the erection of a brick and tile plant to utilize the clay that makes up the greater part of the spoil bank.

The Williams Patent Crusher & Pulverizer Company has removed its San Francisco, Cal., offices to 268 Market St., that city.

The H. W. Johns-Manville Company has opened a new office and warehouse in Galveston, Tex. This is the third office to be opened by this concern in the Lone Star state.

The Brown Instrument Company has issued a booklet "A Letter to Users of 4,000 Brown Electric Pyrometers and 100 Replies," which will prove interesting to those who contemplate the use of pyrometers in clayworking or other plants.

At a special meeting of the Alliance (Ohio) Clay Products Company, it was decided to build another plant, to cost $100,000, and to increase the capitalization from $50,000 to $200,000.

Pottery

A truce has been declared between the Labor Committee of the United States Potters' Association and the officials of the National Brotherhood of Operative Potters, y representatives of both organizations affixing their ignatures to the following:

> "As a result of a conference between duly authorized committees, representing the United States Potters Association and the National Brotherhood of Operative Potters, the undersigned are empowered to sign this instrument, which is understood to be an agreement that the provisions of the Atlantic City contract of August 12, 1911, shall be extended and remain in full force without amendment up to and including November 1, 1913:"

This memorandum was signed by W. Edward Wells, ecretary of the Homer Laughlin China Company, of East Liverpool, Ohio, chairman of the Labor Committee of the United States Potters Association, and by Edward Menge, resident of the National Brotherhood of Operative Potters.

The agreement which was signed in 1911 was to remain n force for two years. The time expired October 1, but because of the tariff on earthenware being lowered, the manufacturers could not see their way clear to go into a joint conference at the usual time—late in August or early in September. The fact that an extension of time was granted for a wage conference at the request of the manufacturers, shows that the workers, by their referendum vote, must have voted that way.

Possibility exists at this time that a general wage conference in the domestic pottery branch will take place some time during October. It is not likely to be held in either East Liverpool, Ohio, or Trenton, N. J., as both committees are a unit in the thought that the farther they are "away from home influences" the better for all concerned.

When the new two year agreement is worked out, it will date back from October 1. It will also have a life of two years from that date, just as past agreements have had. Judging from present indications the labor sky in this trade is showing some brightness, although the manufacturers have frequently made the statement that with a lower tariff and selling prices reduced to meet the cut in imported goods, the trade was in no position to grant an increase in wages.

Ohio pottery manufacturers were given a word of encouragement a few days ago, when the Attorney General of the state, in a written opinion, declared that male and female help in potteries, who are 14 years old and who possess school certificates, have the right to remain at work, notwithstanding the fact that a new law prohibits boys under 16 and girls under 18 from working. The passage of the new law was secured so quietly that the pottery manufacturers did not know that such a measure was up. It is contended that the law or provision in a law was slipped through as a "rider" on the Mothers' Pension bill.

Sanitary pottery manufacturers are complaining of the condition of trade, and a number of pressers who left the domestic branch, and sought work in the sanitary end, are now clamoring to get back to the general ware benches. The slowness of the sanitary trade is said to be due to the slowness in building, and to the fact that new construction work in the East is not up to normal this year.

POTTERY PRODUCTION IN 1912.

The manufacture of pottery is one of the most important branches of the clayworking industry in the country. During the year 1912 the value of the production was $36,504,164, according to the report of the United States Geological Survey. The increased value of the output, over that of 1911 was almost $2,000,000. Ohio was by far the greatest producer, being credited with a value of $15,508,735 and New Jersey was next, with more than $8,000,000. Six states had productions of more than a million dollars each.

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Absolute Control of Temperatures in all Kinds of Kilns and Furnaces
Heraeus Le Chatelier
PYROMETER
Recommended by the highest authorities
For measuring temperature between 0 and 1600 deg. Celsius, equal to 2920 deg. Fahrenheit. Successfully used in establishments for the manufacture of Brick, Pressed Brick, Terra Cotta, Pottery, Porcelain, Stoneware, Chamotte, Cement, Glass, Iron and Steel and other metals, particularly for Hardening and Annealing, also for Molten Metals, Cartridges and Ammunition, Chemicals, Gas Accumulators, and by Boiler Inspectors, Schools and Colleges.
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Fused Silica Ware of Every Description at Moderate Prices
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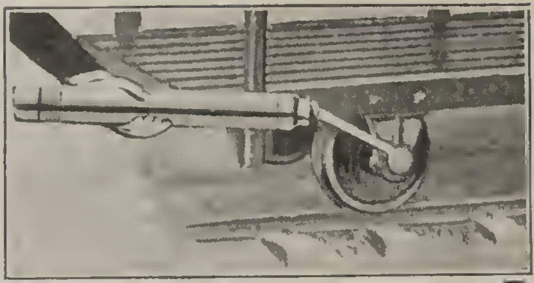
of every description. This Heraeus Patented Fused Quartz Glass is not affected by any changes of temperature whatsoever, and the co-efficient of expansion is only 1-17 that of platinum. It is of the utmost importance for all purposes where the above qualities are essential. Write for information. Pamphlets and References on Application.
CHARLES ENGELHARD, Hudson Terminal Bldgs. 30 Cortlandt St., NEW YORK CITY

Use Toco
"Kiln Car"
Grease and
Save Time,
Money and
Trouble



"The Better Way"

Toco "Kiln Car" Grease will not melt or run off the journals of rack cars when used in the intense heat of dry kilns. Applied with special grease gun, which we furnish with barrel or half-barrel orders.

Write for prices.

THE TROPICAL OIL CO.
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"FREEFLOW METAL"

The Name
"FREEFLOW METAL"

itself implies something—but its use proves more. It is remarkably durable and its initially good qualities last through out, until it is worn down to the thinness of paper.

It is anti-friction, has practically no shrinkage and is a glutton for heavy pressure and high speed.

H. W. GERLOCK, Huntingdon, Pa

"Buckeye Rails Are the Standard for Quality"

THE BUCKEYE ROLLING MILL COMPANY
Exclusively Manufacturers of First Quality Light Steel Rails and Accessories

Offices: Steubenville, Ohio
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BUCKEYE MEANS BEST
BEST MEANS BUCKEYE

All Sections from 12 lb. to 40 lb. per yard
Write or wire us, when in need.

No order too large to handle promptly or too small to secure immediate attention.

PERFORATED METAL SCREENS
As required for
BRICK
MAKERS
USES.

PERFORATED SHEET METALS OF EVERY DESCRIPTION
HENDRICK MANUFACTURING CO.
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Manufactured by
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CARBONDALE, PA.

Face Brick

Publicity campaigns, as conducted by individual firms or associations connected with face-brick interests, almost always include the distribution of literature. It may be a catalogue of moulded shapes or arches, or colored plates showing the blended shades of some matte brick. It may be a book of plans or of half-tone illustrations of buildings where the brick have been used. In any event, this trade literature is designed to convince the prospective builder that the brick advertised are the best for his particular purpose and, at the same time, to create a favorable impression upon the architect. Nine-tenths of this literature is lost, so far as the architect is concerned. Either it fails to convey any specific information, other than the maker's faith and pride in his product (which the architect takes for granted) or it is of a size that makes it difficult to file. *The only receptacle in architects' offices that fits all sizes of printed matter is the waste-paper basket and, following the line of least resistance, most of the trade literature that comes to these offices finds its way to the basket without loss of time on the part of the busy professional men.* When it is considered that architects are keenly alive to the fact that fashions in face-brick change as rapidly as the styles in women's gowns, and that architects are anxious to be in touch with all of the new wrinkles in texture, color and use in this, as in all other building materials, the wonder grows that men who are sufficiently progressive to use printers' ink in their business, show so little insight into human nature as to purposely defeat the very object they are striving for—the favorable impression made for them by the "silent salesman"—the printed argument. If properly dressed—and properly proportioned, this "silent salesman" will do wonders. If improperly dressed, if a "poor talker," if lacking in tact and exceeding in size, it is an economic waste. Few architects can afford specially made filing cabinets; the standard size is made for correspondence and takes letter sheets 8½ in. by 11 in. Desk drawers are, as a rule, so made that two rows of cards or circulars or booklets, each 4 in. deep by 6 in. wide, can be accommodated. These two sizes are standard, and catalogues, detail sheets and other information-giving printed matter that conform to them are almost sure to be filed where, when specifications are being written or materials considered, they will be referred to. Emory Stanford Hall, of the Chicago Architects' Business Association, has been in communication with the secretaries of architects' associations in many cities, with a result that, in the near future, circulars will be issued to the trades, urging that a standard of size be conformed to, which, it is hoped, will lead to a reform in this regard. The utter folly of allowing a printer to dictate the size of your literature, or to adopt a size haphazard, to the end that a great part of it is wasted, must appeal to every sensible man. The feeling that the architect is a "high brow" and therefor to be ignored, is the height of assininity. Face-brick makers cater to architects, for obvious reasons, and the salesman who has the confidence of the "leading architects" is the man who stands highest on the salary list. Yet in a part of the salesmanship plan—the part that advertises your brick at the time the architect is ready to consider and use them, and that does so without drawing a salary or running up an expense account—you show a lack of regard for the architects' convenience, which, if shown by your "star" salesman personally, would close the door of every office he tried to enter.

Nearly ninety million more face brick were produced in this country during 1912 than in 1911, according to the annual report of the U. S. Geological Survey. The total production was 814,000,000, as against 725,000,000 for 1911. The value of the production, bulking face and "fancy or ornamental brick" was $10,707,978, which included $1,027,314 in enameled brick, as against a value of $9,864,757 in 1911. The latter figure included $1,038,865 in enameled brick.

The Art Pottery & Brick Company, of Houston, Texas, started operations Sept. 1st and is turning out 35,000 brick a day.

The Letter Box

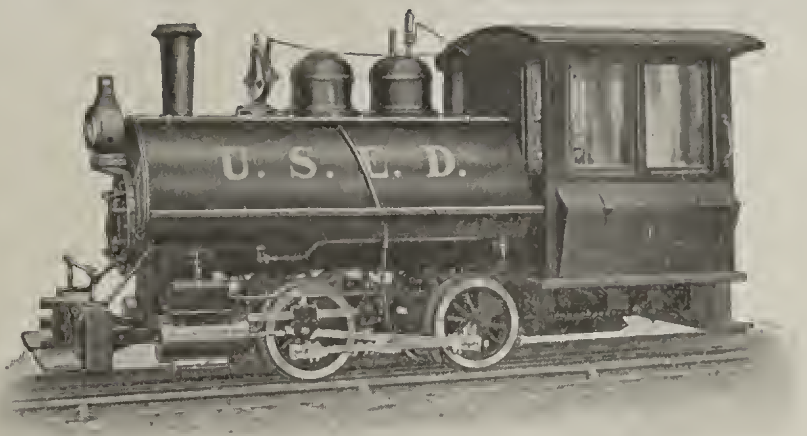
The following letter comes from F. N. Pitkin, of Sawyer N. Dak., who is a real booster for clay products. His optimism is cheering:

> Editor Brick: While in Iowa recently, I got into an argument with a tile drainage contractor as to the relative merits of burned clay and concrete tile, also the quality of burned clay tile, he contending that concrete tile were good enough if only properly made and cured, and that burned clay tile were no good unless glazed. I told him he was behind the times and would better post up. He wanted to know where he'd get his posting. I told him to subscribe for "Brick and Clay Record." "I'll do it," he said. "Here's your dollar." Enclosed please find same. His address is Chris Christensen, Garner, Iowa.
>
> I think you are doing a grand, good work for our brick tile and hollow block manufacturers, and I believe you will win out hands down. I like your aggressive way of doing things. Like Gen. Sherman, when you get your enemy running you "keep 'em at it." We, who believe in burned clay, have much to learn yet before we can declare we have got the best stuff on earth, and the cheapest. However, by persistent effort we have accomplished much so far and it is plain to me that at no distant date we can make the assertion that we have got the best and cheapest building material on earth.

Anton Vogt suggests standardization in kilns and says it is just as possible as it is with any of the other equipment in the clay plant.

> In the last few years, in this progressive age, many enterprises in the business world have been united into one management—a standard system has been adopted to reduce overhead expenses and increase the earnings; in brief—business has been standardized.
>
> Railroad companies and street car corporations use a standard track gauge, so that any car of any make, can be hauled on any line without any alterations whatever. The wheels of the cars fit the gauge and the gauge fits the wheels.
>
> What a turmoil would it be if a Missouri-Pacific car transferred to the Santa Fe track would not fit, or if the gauge of the track were too narrow or too wide!
>
> For convenience sake and practical utility the tracks of the railroads have been standardized.
>
> Are not the brick machines also standardized?
>
> All the dry-presses have the same principle, making brick under pressure, and all have provision for expelling the air in the clay while under pressure to prevent cracking.
>
> The auger machines have the same principle, namely, the revolving and forwarding of the clay to the die, emerging in a column to the cutter.
>
> The sewer pipe and large tile presses have the same principle, namely, the expressing of the clay with the plunger. All these machines are, in a way, standardized. Why then, we ask, cannot a kiln be standardized?
>
> A kiln that is an improvement over the ordinary kiln —a kiln that burns the nearest to 100 per cent of No. 1 vitrified paving or other brick, and vitrified sewer pipe and tile, why can not it be made the standard?

CLAY HAULAGE
Reduce costs of transportation by using a
Davenport Industrial Locomotive



Small Size—Reasonable Cost—Especially built for use of clay-products manufacturers, for hauling clay or shale from pits or mines to plant.
Cheaper Than Horse Transportation
and will reduce costs of delivering your material to your plant, thus increasing profits.
All About Modern Industrial Railways
Write us for particulars
Davenport Locomotive Works
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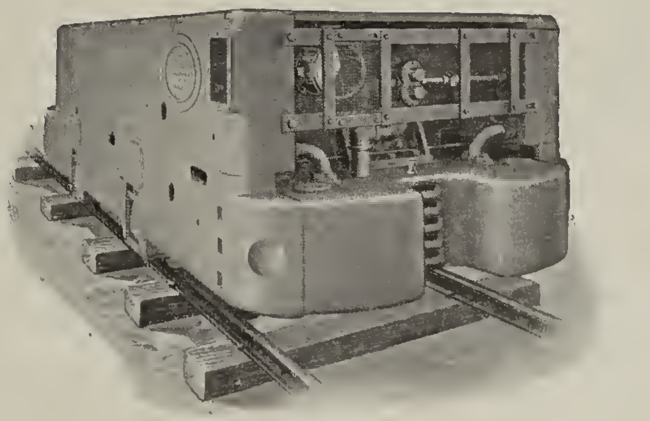
New Orleans: 208 Godchaux Bldg.
Pittsburgh: 405 Oliver Bldg.
Montreal: 286 St. James St.
Winnipeg: 45 Canadian Life Block
Vancouver: 175 Cordova St.

Gasoline Motors



Over 300 in Use—
Used by 150 Companies.
Used for Underground
or
Surface Haulage—
2½ to 16 Tons Weight.
Geo. D. Whitcomb Co.
Rochelle, Illinois

⅝ Yard Revolving Shovel in Clay Pit, Woodland, Ill.

THE LABOR QUESTION

is a very serious one with you, if your men go on strike—if they are continually laying off; if they leave you at the most critical moment. The key to the situation seems to be the use of labor-saving devices.

The little Marion Revolving Shovel shown above may solve your excavating problems. Why not write us today for information.

We build steam shovels in all sizes from the smallest to the largest.

The Marion Steam Shovel Co.
Station A Marion, Ohio

WATCH THE BUCYRUS DIG!

Bucyrus Revolving Shovels
have been designed with careful study as to the demands and requirements of
Brick and Clay Plants
They are stronger, faster and more flexible than any other type of shovel built.

BUCYRUS COMPANY
P.O. Box A. South Milwaukee, Wis.
New York Chicago Duluth Birmingham
R-44-1

We intend to standardize the Anton Vogt Up-and-Down Draft Round Kiln for burning clay wares. What we are going to standardize is "The Principle of Heat Distribution and Heating of the Bottom First." The size and number of fireholes we can not standardize, we fit these to the behavior of the various clays and quality of fuel.

We have started the ball rolling and we will be glad to hear from readers of the "Brick & Clay Record" if it is possible to standardize a kiln. Tell us, and others, what you think about it. We are prepared for rough handling in any shape or form. When it comes to the kiln proposition, we are ambitious to assist in settling the perplexed burning question.

C. R. Trowbridge, consulting engineer for the Dodge Mfg. Co., takes exception to the article by C. B. Mills. The letter follows:

In the Sept. 1 issue of "Brick & Clay Record" there appeared an article "Connecting Electric Motors for Direct Drives," by Mr. C. B. Mills. It is a very interesting story with one or two exceptions. First Mr. Mills mentions the use of paper pulleys in connection with his comment on normal lap. Wood pulleys are just as preferable, if not better in many instances. Under the heading "rope connection," first paragraph, he says for either system as large rope as possible should be chosen. In the Dodge American system smaller diameter ropes are used. With the English system large ropes are necessary that the weight may endure the required tension.

In the former case the tension is controlled by take-up device. Evidently Mr. Mills acquired his theory on size of rope from authorities publishing rules for the English system and without any experience with the American system as properly designed.

With the opening of a general secretary's office in Detroit, Mich., two weeks ago, the real preparatory work for the third annual American road congress began to assume proper proportions and the detail work of making this congress a memorable one has been pushed with commendable activity. Officials of the American Highway Association, the American Automobile Association and the Michigan State Good Roads Association, under whose joint auspices the congress will be held, established headquarters and exhibits were installed for the great good roads exhibition that is now open at the Wayne Gardens.

When those having the congress in charge decided to hold it in Detroit, they realized that the benefits to the State of Michigan, in the assimilation of road building interest, would be very great and Governor Ferris of Michigan was also impressed with the importance of the movement. As a consequence, a proclamation was issued for "Michigan Day," Friday, October 3, and which asked all officials of counties, cities and townships to attend the congress on that day. Throughout the State of Michigan the interest is intense in the congress, and "Michigan Day" was one of the most important events of the week.

Governor Ferris himself addressed the delegates upon the subject of the "Relation of Rural Life to Good Roads;" State Highway Commissioner Frank Rogers delivered an address on "Concrete Road Building;" William Bryant, of Kalamazoo, on "Prison Labor Problems;" Judge J. M. Lowe, of Kansas City, on "The Old Trail Road;" Senator Townsend on "National Legislation," and William F. Johnston, on "The Trunk Line Highway System of Michigan."

Architectural Terra Cotta

The accompanying illustration is that of a terra cotta ornament, approximately 7 ft. 6 in. high, designed for the H. W. Bruns building, 3042 West Madison Street, Chicago, Frommann & Jebson, architects. It was executed by the Northwestern Terra Cotta Company.

Architectural terra cotta is growing in favor, not only as a facing material, to be applied to entire fronts, but to replace stone as a trimming material. In cities where limestone has been used extensively, and where little attention has been paid to the cutting of proper offsets and "drips," the brickwork has been ruined by the white streaks made by the decomposing stone. With terra cotta, this is impossible, and brick men welcome the inroads that terra cotta is making on stone, as they know that the brick will not be made to look porous and otherwise unsightly, by the defacing action of the stone trim. Terra cotta plants are beginning to give increased attention to the wants of the comparatively small user—the man that wants a few sills and lintels, and, perhaps, a band course, or two. The small orders count up, especially as standard shapes and sizes can be carried in stock. Soon the troublesome "we can't do it, the stone is all cut" will be a forgotten phrase on the small flat building. Instead we will have "the brickwork must conform in size to standard terra cotta."

The O. W. Ketchum Company of Crum Lynne, Pa., is featuring its terra cotta shingles, called "terra-tile," which are made in sizes to fit the needs of any design. No stock is carried, the shingles being made to order. Each job is treated individually, both as to color and size and the tile are made to give the effect of old, weather-beaten, moss covered shingles. This is getting away from the formal, conventional idea, and is in keeping with the newer styles of colonial architecture. These tiles are made in gray, brown, green, blue, red and yellow and there is no limit to the variation of shading and form. This firm has copyrighted the name and is about to embark upon an extensive advertising campaign.

Architectural terra cotta is growing in popularity, not only on account of its ornamental features, but on account of its undoubted fireproofing qualities. The use of the white matte finish is growing, one of the newest structures in which it has been used being the Broad Street Theatre in Philadelphia, Pa. There is a tendency toward an improvement in prices in this material, which would indicate that the plants all over the country have been busy during he building season now coming to an end.

IMPORTANT ROAD IMPROVEMENT MEETINGS.

Meetings of societies interested in road improvements are scheduled for various dates in October and November, the more important being the American Road Congress at Detroit, Mich., Sept. 29 to Oct. 4, the American Society of Municipal Improvements at Wilmington, Del., Oct. 7-10, the Southern Appalachian Good Roads Association at Asheville, N. C., Oct. 22-23, and the United States Good Roads Association, at St. Louis, Mo., Nov. 10-15.

DON'T USE GRATES—THEY WASTE YOUR FUEL

Install The

Grateless Gravity Feed Fire Box

That is what this company did and not only saved fuel, but burned their kilns in less time and secured more uniform ware.

READ THEIR LETTER:

Marshalltown, Iowa, Sept. 2, 1912.

Grateless Furnace Company, Des Moines, Iowa.

Dear Sirs:—

As to your request will state that, after installing the Grateless Fire Boxes in what kilns we had and the two additional kilns which you built for us, we turn our kilns quicker, get more uniform ware, better glaze, and a greater saving of fuel, by far, than the old style basket grate which we were using.

Hoping this will be of some benefit to you, with best wishes,

Yours very truly,
Marshalltown Sewer Pipe Co.,
By (Signed) F. J. GARY, Sec. and Mgr.

You should at least investigate, and give us a chance to convince you of the benefits to be derived from this system. We will send a pamphlet and full information on request.

GRATELESS FURNACE CO.

P. O. Box 685 ES MOINES, IOWA

To Prevent Scum Appearing on Your Brick, Terra Cotta, Etc., Use

R. H. Precipitated Carbonate of Barytes

Literature on Application

Other High Grade Chemicals For Clay Industries

The Roessler & Hasslacher Chemical Company

100 William Street, New York

Make Brick and Profit All Year Around

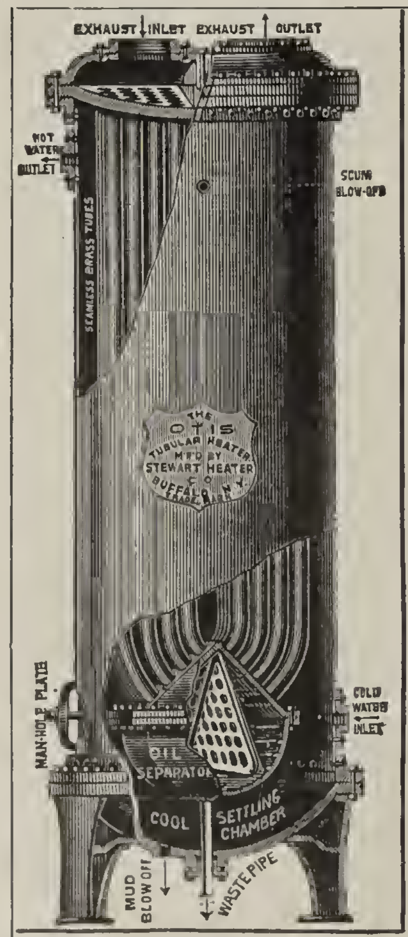
Why shouldn't you make Brick and profit all the year around instead of only in certain seasons? Or why shouldn't your ware be as good one season as another?

Aren't your personal needs as great in winter as they're in summer—and isn't your expense **going on** more or less, even if there is nothing **coming in**?—Of course!—And here's how to solve this problem. Install

THE NATIONAL SYSTEM OF DRYING BY EXHAUST STEAM

It will not only **add** to your profits all year around, but **reduce** your running expenses accordingly as it will settle your drying problems. Particulars on request. Don't delay in getting them.

THE NATIONAL DRY KILN CO.
1118 E. Maryland St., INDIANAPOLIS, IND.



THE OTIS

Tubular Feed Water Heater, Oil Separator and Purifier

is not an experiment but a tried and trusted appliance that the makers are not afraid to

GUARANTEE

To heat the feed water to the *boiling point* (210 to 212 degrees) with the exhaust steam without causing any back pressure, *also to extract the oil from the exhaust*, so that the exhaust steam after being passed through the heater can be used for other heating purposes, and the water of condensation for the heating system be returned to the boiler without the *additonal expense* of an *eliminator*.

We are so sure of the OTIS that we agree to pay all cost of a trial—freight, cartage, piping, etc.—if it fails to do all we claim for it.

Catalogue and Prices at Your Service

The Stewart Heater Company,
33 EAST DELEVAN AVENUE - BUFFALO, N. Y.

Freight Tariffs

Clayworking plants may be roughly divided into two classes—one including those plants that sell the major portion of their output in home markets, the other those that ship largely by rail and depend upon "foreign" markets for their outlet. In the first class, the matter of tariffs on burned clay materials is of little importance, but in the other it is so vital to the success of the plant, that it passes understanding that so little attention has been paid to it in the past. Plant managers expect their superintendents, burners, mine bosses and foremen to have some knowledge of the problems of labor, fuel and machinery that confront them day by day, yet entrust the subject of freight rates and freight bills to men who have little or no knowledge of railroading. The trouble is that they cannot or will not be brought to understand *that the manufacturer pays the freight.* This seems hard to learn, in view of the fact that prices are almost always made f. o. b. the works, and yet a little thought will show that the man who buys your product figures your yard price, plus freight, and gives you the order on the combination of the two figures. The fact that he pays you a part and the railroad the rest, does not alter this in the least; he buys f. o. b. his delivery point, and, since the amount of freight is a fixed factor, he makes you shade your yard price, in case shading is necessary, to get the business. Technically, he pays the freight—actually, you pay it, since whatever it may amount to has an effect upon the net price you secure for your material.

You talk economy to your superintendent, your buyer and your salesmen, and expect them to apply modern methods intelligently, to the end that you will produce more, or better goods at a less price, despite the growing wage scale and the uplift in fuel prices. To whom can you talk about reducing the amount of the freight bills that you are paying—*paying just as surely as though you were drawing a check to the order of the railroad company every time a car leaves your siding?*

Take a pencil and paper and figure, for yourself, the amount of freight that is being paid on your output. Compare the total amount with the labor cost at your plant for the same period, or with any other big item of expense, and then ask yourself if you are doing yourself justice in entrusting the payment of so important an item in your cost, to a man who is simply reading tariffs, or calling up the freight agent to "get a rate."

Courses in traffic and transportation are being conducted in many colleges and correspondence schools have been or will shortly be instituted. Encourage someone around the office to learn the inside and out of railroading, to locate junction points and familiarize himself with the terminal facilities of the various carriers *at the points to which your shipments are being made.* Have him learn how and when to trace your cars, and cease your present ostrich-like method of considering the shipment as belonging to the consignee the moment the car rolls off your switch. Try to believe that *it is your carload until your customer takes delivery,* and not put the whole thing up to the other fellow.

If your shipments "come through" quicker than your competitor's, you will enjoy an ever increasing trade. If your rate is better than your competitor's, you will enjoy a better net yard price for your material.

Some day you will be looking for a trained traffic man to handle that very vital part of your business—*is it not better sense to train one of your present force and reap the immediate reward of the training?*

The following changes have been made in freight rates affecting clay products, since the last issue of "Brick & Clay Record" and are now in effect:

From Eastern Points.

From Beech Creek, Bigler, Clearfield, Clymer, Faunce, Irvona, Karthaus, Krebs, Lock Haven, Lumber, Mahaffey, Mill Hall, Monument, Orviston, Patton, Phillipsburg, Snow Shoe, Wallaceton and Woodland, Pa., Brick, and articles taking same rate, to Grand Mere and Shawinigan Falls, P. Q., 22¼ per cwt.; to Sorel, P. Q., 23 per cwt.

From Brownstone, Pa., Brick, to Columbus, N. J., 8½c per cwt.

From Carteret, Chrome, Keasbeys, Maurer, Perth Amboy and Seawarren, N. J., Brick (common, fire, front, hollow and stack) to Sidney, N. S., 29c per cwt.

From Carteret, Chrome, Keasbeys, Maurer, Perth Amboy and Seawarren, N. J., Brick (chimney, common fire, front, hollow, pressed and stack) to Convent, Dominion, Jacques Cartier Junction, Lachine, Montreal, Pte. St. Charles, St. Henri, St. John, St. Laurent, St. Paul and Western Junction, P. Q., 15c per cwt.

From Clermont, Pa., clay products, to Hopatcong, N. J., 11½c per cwt.

From Williamsport, Pa., Brick (fire) to Buena Vista, Va., 16½c per cwt.

From Middle West Points.

From Winslow Junction, N. J., Brick, to Minersville and Shenandoah, Pa., 8¾c per cwt; to Pottsvilie, Pa., 8½c per cwt.

From Hamilton, Ill., Brick and drain tile, to Carthage, Ill., 3¼ per cwt.

From Hamilton, Ill., Brick (except bath and enameled) fireproofing, flue lining, drain tile and hollow building tile, to Burlington, Ia., 3¾c per cwt.; Bushnell, Ill., 3c per cwt.; East Peoria and Peoria, Ill., 3½c per cwt.; Warsaw, Ill., 2c per cwt.

From Hamilton, Ill., Brick, (except bath and enameled) fireproofing, flue lining and hollow building tile, to Keokuk, Ia., 2c per cwt.

From Hamilton, Ill., Brick and hollow building tile, to Alexandria, Mo., 4.9c per cwt; Canton, Mo., 5½c per cwt.; Montrose, Ia., 5.1c per cwt.; Mocar, Ia., 4.8c per cwt.; Sandusky, Ia., 4.8c per cwt.; Santuzza, Mo., 5½c per cwt.

From Manistique, Mich., (when originating beyond) Brick, fire brick, radial chimney brick and fire clay, to Blind River, Ont., 11¾c; to Coniston, Ont., 12¾c; to Copper Cliff and Espanola, Ont., 12¼c; to Port Arthur, Ont., 23½c; to Sudbury, Ont., 12¼c; to Thessalon, Ont., 10¼c; to Victoria, Ont., 12¼c; to West Fort William, Ont., 23½c per cwt.

From Portsmouth Ohio, Brick, fire brick and fire clay, to Fort William and Port Arthur, Ont., 17½c per cwt.

From Western Points.

From Oskaloosa, Mo., and Pittsburgh, Kas., Common building brick, to Omaha and South Omaha, Neb., 7½c per cwt; to Lincoln, Neb., 8½c per cwt.

From Wichita, Kans., Brick (common, face, paving, T-rail paving and pressed) but not applying on porous, ornamental, radial, enameled bath or fire brick, to Chamberlain, Conlen, Dalhart, Stevens, and Stratford, Tex., 14c per cwt. From Waco, Kans., to Dalhart, Tex., 14c per cwt.

From Southern Points.

From Fort Runyon and Waterloo, Va., Brick, to West Collingswood and Atlantic City, N. J., 11½c per cwt.

From Marlboro, N. C., Brick (common) to Roslin, McMillan, Oakland, St. Paul, Smith Bridge, Roziers, Woodmore, Powers, Bee Gee, Lumberton Junction and Lumberton, N. C., $1.80 per M. brick; to Dundee, Tobermory, Duart, Tar Heel, Perth, Dublin, Berwick and Elizabethton, N. C., $1.80 per M. brick; to Roseboro, N. C., $1.90 per M. brick.

The "Martin" BRICK MACHINERY

Modern YARD SUPPLIES

Soft-Mud or Stiff-Mud Processes

Get Our Plans

Dry or Wet Grinding Pans

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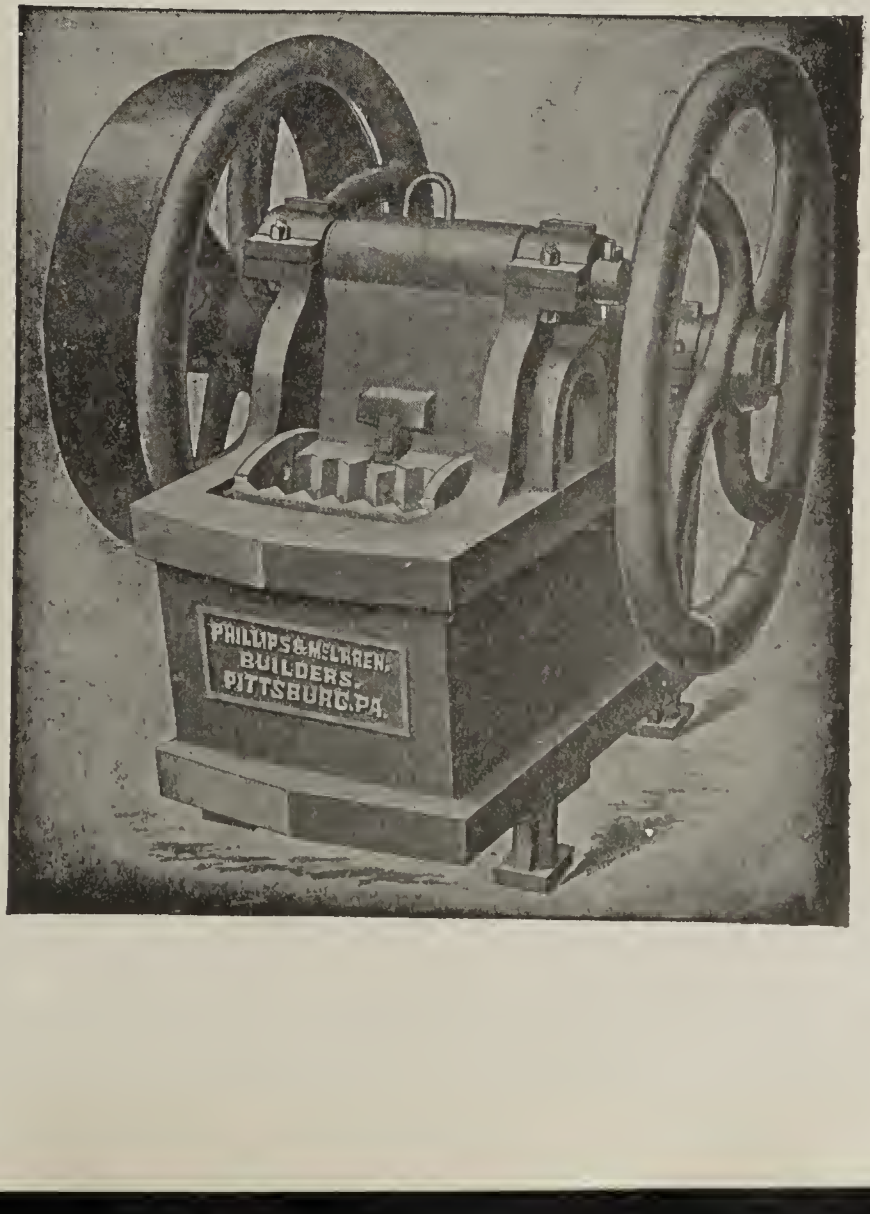
PHILLIPS & McLAREN CO.
PITTSBURG, PA.
Builders of Pittsburg Standard Dry and Wet Grinding Pans, Rock and Ore Crushers
For BRICK, CEMENT, TERRA COTTA and All Kinds of REFRACTORY MATERIALS
When writing for Prices, state kind of Material and Capacity
Eastern Sales Office: Stephen Girard Building, PHILADELPHIA, PA.



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SOLID WOVEN
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BUILT
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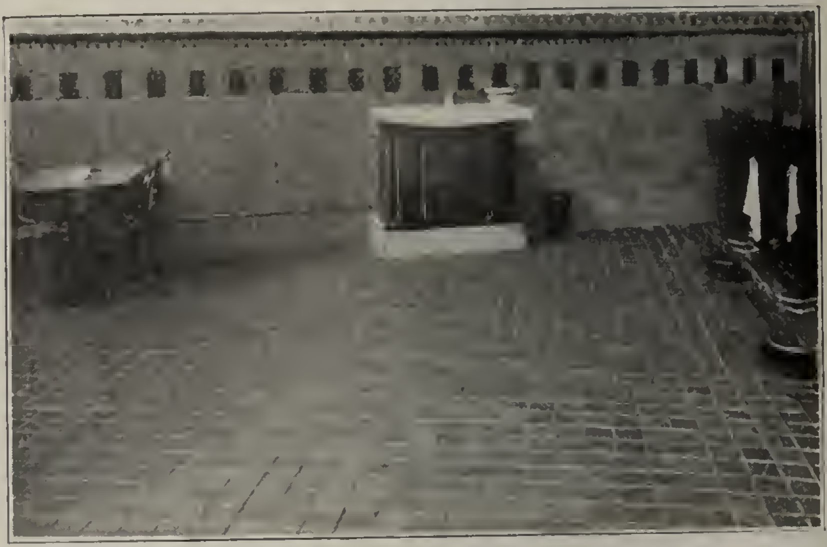


The accompanying illustration depicts the tile work in Gaertner's restaurant, Trenton, New Jersey.

The wainscoting is "Jugendstyle" in design and is 5 ft. 10 ins. in height. The body is composed of 6x6 tiles, set straight joint in a dense semi-matte sap green glaze: cap, base and liners are in olive green, while the relief 6x9 insert is hand-painted in colors. Alternating with this is a 6x9 plain in a green crystal glaze. As can be seen from the illustration the frieze runs entirely around the room.

The floor is laid with 4¼x4¼ square, red quarries, with a border in extra thick, ¾ square mosaics, in dark green. It is also laid with a wide joint and the quarries were sorted in about four shades, set promiscuously.

It seems strange that in the larger cities one cannot find more grill rooms, cafes, theater and hotel entrances tiled after the manner of the Gaertner restaurant. As tiles portray craftsmanship they are of ever increasing interest, to say nothing of being fireproof and sanitary. In fact, there is no reason whatever why colored tiles should not be used to a greater extent for wainscoting application. In Europe this class of work is to be found at every turn in both public and private buildings.

Both the floor and wall tiles as applied in this restaurant have been set just as the fire produces them. Several sizes were used in the wainscoting, no attention whatever being paid to the irregularity of the joints. In sorting the wall tiles they were thoroughly alternated or mixed, consequently the play of light and shade on the various shades is extremely artistic and interesting.

Nothing has retarded the progress of the tile industry so much as the mistaken notion that tiles when set should all be of precisely the same shade and size. Fortunately we are beginning to see the light and every day produces tile work that now displays some artistic feeling. In fact, the old idea that both wall and floor tiles should be laid with hair joints and each piece exactly alike is rapidly disappearing.

Gaertner's restaurant is a fair example of how tiles should be marketed and set, and, as stated above, no effort was made here to conceal the joints between the pieces. Fritz Gaertner, the proprietor, was thoroughly in accord with this idea and stated, "I want my tile work to show that it is tile and not to appear as though painted tin or linoleum."

The designing staff of the Trent Tile Company, which made all the tiles for this building, spent a great deal of thought and study on the wainscoting, as the restaurant is thoroughly German in every particular, hence the appropriateness of the German "Jugendstyle" design. Mr. Gaertner was extremely anxious that this idea should be carried out in tile work, as he takes great pains in trying to please the numerous professional, political and business men who lunch at his establishment, which is noted all over the state for its famous German cookery.

The glazes used for the tiles in this restaurant were made especially for the work by Charles P. Lawshe, ceramist and general manager of the Trent Tile Company.

Sand-Lime Brick

THE SAND LIME BRICK ASSOCIATION.

Headquarters, 211 Fillmore Avenue, Buffalo, N. Y.
President, S. O. Goho, Harrisburgh, Pa.
Vice-president, F. B. Allan, Toronto, Ont.
Secretary, W. E. Plummer, Jr., Buffalo N. Y.
Treasurer, John L. Jackson, Saginaw, Mich.

Executive Committee.

G. Silvester, Calgary, Alta.; E. G. Chapman, Minneapolis, Minn.; E. M. Burchfield, Rochester, N. Y.; H. H. Tifft, Tifton, Ga.; L. W. Penfield, Willoughby, Ohio.

If ever a manufacturing plant was rejuvenated, that end has been attained in the Granite Brick Company's case, says the Michigan City, Ind., "Evening News." The old Excelsior Brick Company's plant is no more. In the remaking, the old, complicated machinery has been abandoned and new, modern machines have taken the places of the costly outfit that proved unprofitable. The result is that some of the best sand lime brick made in America is being turned out by the Granite plant at less than half the cost of manufacture as under the antiquated methods pursued by the old company.

Early this year, the Granite Brick Company of Michigan City, Ind., was organized and A. Van Spange made manager. He injected rich, red blood into the veins of the newly organized company and today, after a few months, the plant has fulfilled the fondest hopes of its stockholders. Coming to Michigan City, Mr. Van Spange was not handicapped by financial limitations. He was told to go ahead at full steam, and he acted accordingly. The first move was across the continent, and from Seattle, Wash., came Mr. P. K. Tucker, a practical engineer and expert in sand lime brickmaking. Both men had practical ideas in brickmaking and agreed that nothing could be done with the old outfit. So they "junked" from $30,000 to $50,000 worth of machinery and installed a new equipment.

They placed but four steps between the sand as it lay in the hillside and the finished brick in cars, ready for shipment.

The first step was to the mammoth grinder and mixer. Each of two molars of this machine weighs six tons, and after being thoroughly ground and mixed with lime (the latter ingredient constituting 8½ per cent of the finished brick), the mixture, by means of a mechanical elevator, is taken to the floor above and deposited directly over the press, which stands on the main floor. By its own weight the sand and lime drops into the press as it is needed. This constitutes the second step.

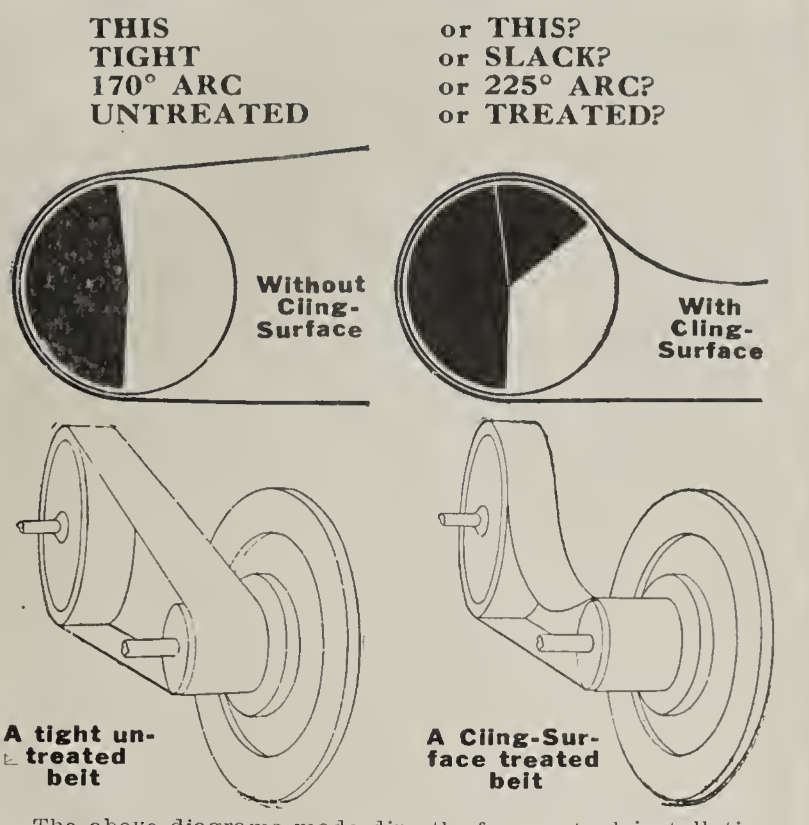
After passing through the press the mixture comes out in brick form at the rate of 30,000 a day in one press and 26,000 a day in the second press, and the third step then is to convey the soft brick into the hardening cylinders, of which there are two. Thus about ten minutes have elapsed since the sand left the hillside.

These hardening cylinders are about 70 feet in length and 6½ feet in diameter and each has a capacity of 20 cars of brick, not railroad cars but brick yard cars, each of which holds 1,000 brick.

Live steam at a pressure of 150 pounds to the square inch is turned into these hardening cylinders at night, usually for a period of eight hours and the next morning the hardened brick pass out the other end of the cylinders and take the fourth step and land in the railroad cars upon a nearby side track, or find convenient waiting places in the storage yard.

Under the old system the brick crossed and criss-crossed from one side of the plant to the other and back again before leaving the hardening cylinders and each extra step increased the cost of production accordingly. By doing away with the long drawn out system the force has been reduced one-half, which means a corresponding reduction in the payroll, and the company therefore is in position to meet all competition.

One of the important features inaugurated under the new



The above diagrams made directly from actual installations speak volumes for Cling-Surface. Increased arc, higher pulling capacity for the belt, non-slip, decreased power loss, longer belt life, waterproofing, saving in lubricating oil, saving in babbitt and journals, saving in labor and a great saving of worry, are all obtainable where Cling-Surface is used.

If you are interested send a trial order, or, at least, send for further proof, facts and figures.

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New York Boston Chicago Denver Atlanta Memphis etc
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Why Worry About Deliveries

Any driver can unload in one minute without damaging the brick if you use

The Martinsburg Brick Wagon
They **slide out** easily in a nice pile.

You increase the capacity of each team 30 to 50%.

We can refer you to users in every section who handle all kinds of brick.

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The Superior Quality of

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result of many years of practical experience and there has been no branch of clay manufacture in which they have not been placed in service.

The investment demanded for the best possible car for your plant requires careful investigation.

The Industrial Car will be your first choice and the one eventually purchased. The manufacture of dryer cars is only a small part of our line. We have a car for every need.

Write for our catalog and let us submit an estimate for the coming season's requirements.

Electric Locomotive & Car Co.

Successors to The Industrial Car Co. and The Cleveland Car Co.

West Park, Ohio

Chase Improved Flexible Bearing Folding Deck Dryer Car

See this car before placing your order.

We also manufacture a full line of Side Dump, Bottom Dump and General Purpose Cars, Transfer Cars, Turntables, Switches, etc.

The Chase Foundry & Mfg. Co., Columbus, O.

management is the gravity system of moving the product in its progress through the factory. Where formerly it was necessary to use hand or other power, the loaded cars now move from the presses to the hardening cylinders and in turn from the cylinders to the yards and freight cars over inclined tracks.

By the new method of brick making there is no uncertainty in the quality of the product. There are no off days. It's a positive thing, if one brick is good all are good. The component parts are always the same. Everything about the plant runs with clockwork regularity. It's simply a case of putting the sand and lime in at one end and loading out the finished product at the other.

Sewer Pipe & Drain Tile

Methods of protection from subsurface drainage in farm districts are discussed in a report of the United States Geological Survey, recently reprinted. Under the title "Underground Waters for Farm Use," this report explains in simple language the habits of flow of underground waters through different kinds of rocks and soils, and calls attention to the dangerous character of many wells whose waters are supposed to be pure and wholesome. Water from limestone rock especially, it is stated, is apt to contain germs of typhoid or other disease, due to the fact that surface waters may find their way directly into underground channels which have been cut out through the dissolution of the lime. A copy can now be obtained free, on application to the Director, United States Geological Survey, Washington, D. C.

The first thirty-six inch vitrified sewer tile ever made in the state of Iowa has just been turned out by the National Sewer Pipe & Tile Company of Webster City, Iowa. Each tile is three feet long and in the green state weighs 1,300 lbs. This size tile can be made at this plant at the rate of 150 a day and, though the company is handicapped by a car shortage, it is shipping at the rate of ten carloads every working day.

Reorganization of the Lehigh Sewer Pipe and Tile Company of Fort Dodge, Iowa, placed M. P. Chumlea, formerly of Omaha and now of Boston, as manager of the plant at Lehigh. George W. Avery of Sioux City bought control from E. J. Breen and Charles Larrabee.

TRAINING CERAMISTS TO WRITE.

Iowa State College Institutes Courses in Technical and Specialized Journalism.

Courses in industrial and engineering journalism have been started at the Iowa State College of Agriculture and the Mechanic Arts, at Ames, Iowa. The purpose of these courses is to train the engineers who graduate from the college, to write clearly and interestingly of such engineering and industrial work as they will become connected with in the careers to which the engineering courses are the opening wedges.

It is also purposed to train them to prepare, in a readable form, the reports of work done in connection with the various subjects which are taken up at the college. A "laboratory of journalism" is being installed, in which the usual laboratory apparatus will be replaced with current numbers of the recognized technical, specialized and trade journals, which will be analyzed and made the basis for a course of lectures on modern technical industrial literature.

The crying need for a better literature, descriptive of modern processes and historical data connected with the many branches of ceramics offers a wide and profitable field for the man who, being in touch with the latest developments, can put his experiences into easily read and really instructive print. The ceramic industry is becoming more and more a matter of exact sciences and the "rule of thumb" is disappearing in the desire of the yard superintendent and "others in authority" to apply the knowledge which now reaches them through trade journals, to practical use on the clayworking plant.

On the other hand, the "new competition" which is changing the aspect of many industries, leads men to give their fellow workers the benefit of their own experiments, and solve for the many the difficulties which, formerly, they were satisfied to solve for themselves, and to keep the knowledge hidden.

Educating the men who are learning what to do and what to avoid, in order that they may give the benefit of their knowledge to a host of less lucky workers, is a movement that merits the support of the craft as a whole, and "Brick and Clay Record" appreciates the compliment paid it by the College, in the request for copies to be placed in the "laboratory."

Hollow Block

A prominent city engineer, in an address made before a recent meeting of clay products manufacturers, made the statement that with few exceptions, manufacturers of clay fireproof materials, gave entirely too little attention to the campaign of education necessary to insure the intelligent use of their materials. This did not apply so much to the architect and engineer as to the workmen who set the material in the walls or floors. He pointed out, for instance, that there was a wide difference in the action of lime mortar and of cement, and that while the former was far and away the best for setting porous tile, it was inferior to cement mortar when the tile was impervious. The chemical nature of the two, being entirely dissimilar, should be studied by those interested in the manufacture of the tile, and printed instructions, relative to the proper proportions of the various ingredients of the mortar that should be used, ought to accompany the shipments of material. It is well known that lime mortar, placed between two impervious surfaces and prevented from drying out quickly, is practically useless, when it comes to holding the two surfaces together; on the other hand, cement mortar, exposed to porous and absorbent surfaces, gives up the moisture that is needed to make it "set" before it has a chance to undergo the chemical change that makes it a proper part of the wall. To leave these important matters to the discretion of the foreman on the job, or to trust to the architect's not overlooking them, is unwise, since if the wall fail or the floor give way, the clay product is apt to bear a great part of the blame. Face-brick men have issued these instructions and floor tile men are doing the same—where is the hollow block man?

At Haydenville, two miles northeast of Union Furnace, Ohio, the National Fire Proofing Company has bought in a test oil well that gives promise of being one of the largest ever drilled in that section of Ohio. At the general offices of the company in Pittsburgh, Pa., no statement concerning the production is being given out, but it is rumored that the company thinks so well of the prospect that it will immediately start the sinking of four additional wells. On account of this oil strike, it is claimed in the Pittsburgh financial district, that since the first well came in, the value of the company's holdings, which are about 3,100 acres in the vicinity of the first well, have increased in value more than $500,000.

The General Fireproofing Company has just declared its twenty-sixth quarterly dividend of 1¾-per cent on the preferred stock, and a quarterly dividend of the same amount on the common stock. Both dividends are payable October 1, to all share holders of record on Sept. 20.

The Rust
Clay Feeder

Is a machine with a purpose. It is used not only for **efficiency** but for decided **economy**—saving you upwards of $500.00 a year in your clay plant. While it saves you real money it also permits a more uniform mixture of your material and therefore improves your product.

You may dispense with "something else" but not with The Rust Clay Feeder—it's **indispensable.** Shall we send you more evidence?

Marion Machine, Foundry & Supply Company
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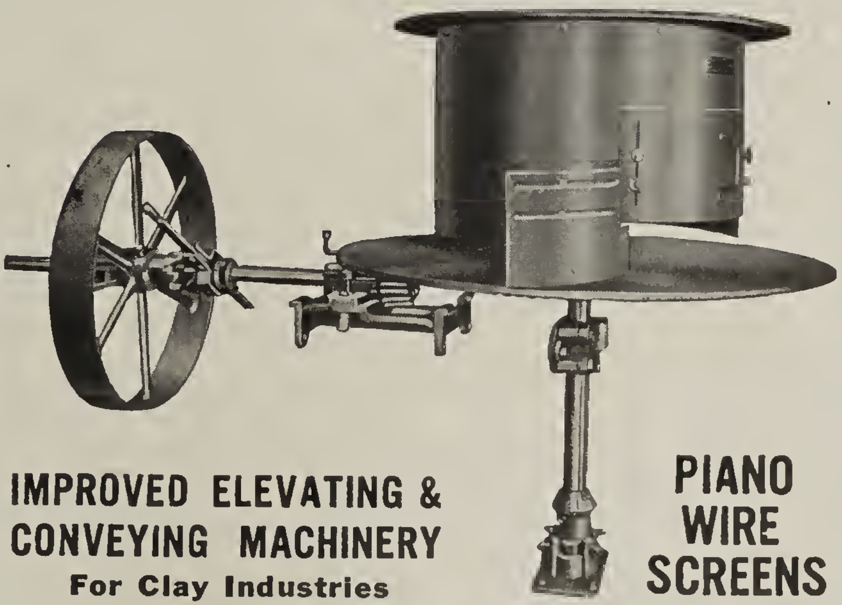
COLUMBUS
Automatic Feeder
INCREASES CAPACITY—IMPROVES PRODUCT
Let us explain!



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Robinson Graves S. P. Co., Uhrichsville, O.
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The Clay Machinery Folks of the United States and Akron, O.

Fire Brick and Refractories

Conditions in refractory lines are not as satisfactory as they were two or three weeks ago. Construction work that has been planned for months and that was due to result in shipping orders during the present month, has been definitely postponed until Spring and a policy of retrenchment is taking the place of the progressive policy that marked large commercial enterprises up to the point when President Wilson had seemingly demonstrated his ability to cope with a condition that has existed in Washington ever since "tariff" became a campaign issue. The feeling that, having demonstrated not only his sincerity, but his power to compel both houses to live up to the letter of platform promises anent the tariff, the President will "go through" with currency reform, income tax, railroad regulation and the other vote-getting planks in the campaign, is growing apace. As a consequence, financiers will not loan money, railroads will make only necessary repairs and additions to equipment, large manufacturing plants will try to get along without spending any more money than is absolutely necessary and smaller industries, while working full time to fill present orders, will not take the time to make necessary repairs, feeling that there will be ample leisure to make them later. The result is that a fine-combing of the refractories market is in progress, Eastern plants invading the Middle West and vice-versa, all hoping to annex some of the other fellow's small, but high priced business, to fill in the gaps that are threatened in the capacity that has, all year, been taken on contract. The bright light now is that, having one victory to his credit, the President will be able to crowd Congress into quick action on the other issues, and settle them at an early date—possibly before the new year dawns.

An increase in production of 13 per cent and an increase in the valuation of the product of more than $1,800,000, 1912 over 1911, gives some indication of the condition of the fire brick business at the beginning of the present year. The figures given are taken from the report of the United States Geological Survey, and are believed to be authentic. Rating by the value of the production, Pennsylvania led all other states, with a production of $6,178,870, with Missouri second, with $1,941,347. Following these came Ohio, with $1,629,638, and New Jersey with $1,460,988. Kentucky qualified in the million dollar class, with $1,000,056. These five states produced more than 67 per cent of the total amount manufactured in this country in 1912.

The Elk Fire Brick Company, of St. Marys, Pa., is, it is rumored, about to locate a plant at Bridgeburg, Ont.

The Courtney Fire Brick Company of Monongahela City, Pa., has increased its capital stock from $50,000 to $420,000.

Business men of Salina, Pa., have completed the formation of the Salina Coal and Clay Company, which is the successor of the Salina Fire Brick Company. Plans for the resumption of operations at the plant are now under way. To furnish funds for the operation of this property, a mortgage of $300,000 has been filed in the County Recorder's office at Greensburg, Westmoreland county, Pa., covering the lands of the company in the northern part of Westmoreland county and 20-year bonds will be issued. The reorganization of the company was brought about through the efforts of Edwin S. Naly.

The Standard Refractories Co., is rushing work on the construction of its new plant and buildings at Claysburg, Pa. It is possible that this new plant will be placed in operation during the early part of 1914.

The Louisville (Tex.) Fire Brick Works has filed amended articles of incorporation, fixing the limit of its indebtedness at $100,000.

Silica brick to the number of 135,578,000 and the value of $2,923,174 were produced in the United States in 1912. In 1911 the production was 104,483,000 and the value $2,520,816.

Paving Brick

An unprecedented demand for paving brick has so crowded the capacity of the Foster plants in Western Pennsylvania and Southern New York, that C. E. Foster, president of the Foster Paving Brick Co., has closed a deal whereby he takes over the Youngville (Pa.) Brick & Tile Company and the Binghampton (N. Y.) Paving Brick Company. The two plants will be operated under the Foster management, with capable local superintendents. The combined production of the plants now controlled by this company is upwards of 100,000 first quality block per day and plans have been made to increase the capacity of all of the units of this fast growing enterprise. Three additional kilns are to be built at Bradford, Pa., two additional kilns at Youngville and additional machinery at Binghampton. When these improvements are all completed, it is said that this company will have the largest output east of the Ohio-Pennsylvania line. At a recent meeting of the Eastern Paving Brick Manufacturers Association, Mr. Foster was elected to its presidency, vice C. P. Mayer, of Bridgeville, Pa.

Arthur H. Blanchard, M. Am. Soc. C. E., consulting highway engineer and professor in charge of the graduate course in highway engineering at Columbia University, and Prevost Hubbard, Assoc. Am. Soc. C. E., consulting chemist, in charge of the division of roads and pavements, Institute of Industrial Research of Washington, and lecturer in highway engineering chemistry at Columbia University, have formed a partnership under the firm name of Blanchard & Hubbard, with offices at Broadway and 117th street, New York City. The new firm has been retained by Commissioner John H. Delaney as the advisory highway board for the New York state Department of Efficiency and Economy.

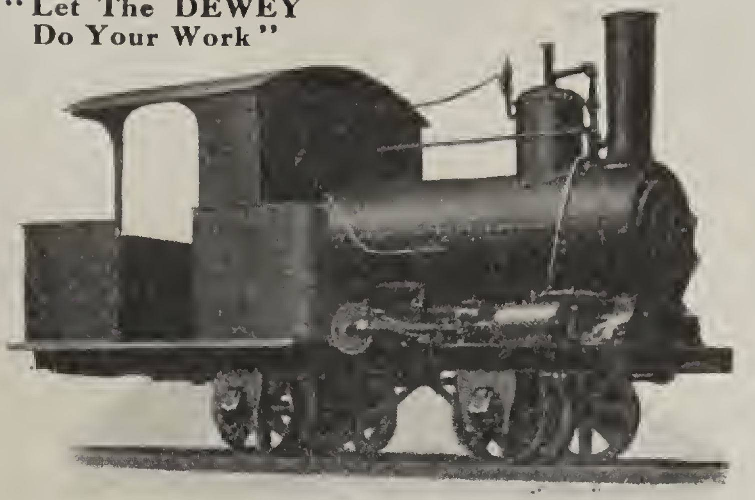
No little credit is due the Denny-Renton Clay and Coal Company for the amount of hustling they have done, in the cause of paving brick. King county, state of Washington, has laid about 16 miles of vitrified brick pavement; Pierce county about one mile, with plans to lay much more next year; Snohomish county, one mile and Kittitas county one and a half miles. This aggregates about twenty miles of vitrified brick pavement on concrete foundation, with concrete curbs. The roads paved vary in width from 17 to 21 feet and the cost varies from $20,000 to $28,000 per mile. Up to the time that brick was actively pushed, this business had all gone to the various kinds of pitch and bituminous patented pavements. No material other than brick is now used in the four counties named.

The Western Paving Brick Manufacturers' Association will shortly occupy new quarters, in the Dwight building, Kansas City. In the new location, ample room has been secured for the holding of meetings, and hereafter all sessions of the association will be held in its own quarters. Secretary George W. Thurston announces the following important paving brick contracts closed during the past few months: Parsons, Kan., 15,000 sq. yds.; Fort Scott, Kan., 15,000 sq. yds.; Lexington, Mo., 6,500 sq. yds.; Dodd City, Kan., 12,800 sq. yds.; Hutchinson, Kan., 14,000 sq. yds.; Kansas City, Kan., 5,000 sq. yds. The three last named are for vertical fibre brick.

VITRIFIED BRICK FOR COUNTRY ROADS.

The U. S. Department of Agriculture has recently issued as Bulletin 23 of the new departmental series a contribution from the Office of Public Roads on "Vitrified Brick as a Paving Material for Country Roads." The Bulletin declares brick roads have four distinct advantages: Durability, easy traction, ease of maintenance, and good appearance. The materials used and the process of manufacture are described as well as methods of testing the bricks. The construction of brick roads is set forth in detail and the various steps in the process are illustrated. Especial attention is directed to the im-

"Let The DEWEY
Do Your Work"



The DEWEY

It
Reduces
Clay Haulage Cost

It is a mistaken idea that old methods are the cheaper. The tendency of the times is to increase efficiency and reduce cost.

The DEWEY is a product of modern engineers and designers. It was designed to supplant the mule-driven car, the man-pushing cart and the drum hoist and cable in the clay pit, and do it at a less cost.

It cuts the cost bill and gives greater efficiency.

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The DEWEY not only does the same work the mules do, but does MORE work. It also goes into a clay pit and brings out a full load where a mule cannot go.

The chain-drive is responsible for this. Because of it the DEWEY can take almost ANY grade and give greater service than any other known system of haulage.

It Outpulls ANY Standard Locomotive of Same Size and Weight

Size for size—weight for weight—the DEWEY asks no odds of any locomotive. Its great boiler capacity—its ready response to the demands made upon it, and its unusual lightness, make it ideal for the clay pit.

The DEWEY

runs on ANY track. Many brickyards use wooden rails. These are found to be sufficiently strong to bear the burden, and the peculiar construction of the DEWEY makes it possible to take short curves and severe angles without injuring the rails.

The DEWEY is sold for several hundred dollars less than any standard type locomotive and yet does better work and at a less cost of up-keep.

The DEWEY was especially designed to meet the requirements of the brickyard and clay pit.

The DEWEY has greater boiler capacity than other locomotives of the same size and weight.

The DEWEY is a quick steamer and can be handled by any of the ordinary help about the yard.

We have a booklet which tells all about the DEWEY in the clay pit. If you mention "Brick and Clay Record" a copy is yours for the asking.

DEWEY BROS.
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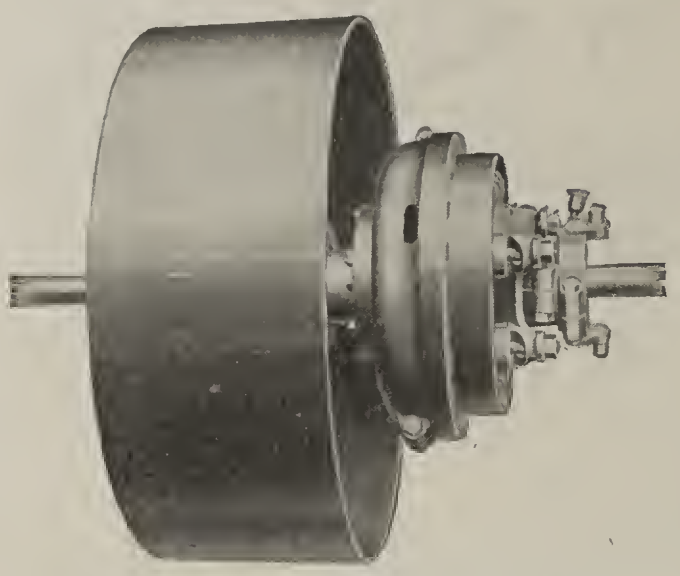

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Accident Insurance for the Men

The Dodge split friction clutch is to the employe what the $25,000 accident policy is to the employer.

The Dodge clutch enables the manufacturer to drive his machinery in units—without expensive alterations to his present system.

In case of accident—when life and limb are dependent on instant action—the Dodge friction clutch is the only insurance the employe has that he will work tomorrow.

Any unit may be instantly disconnected from the main driving line and power which goes into idle sections of the factory saved by cutting off that section with the Dodge clutch.

A greater margin may be added to profits by breaking up the line of power into individual units, which can be run separately or as a whole.

The Dodge split friction clutch is standardized. It is carried in stock by branches and service agencies.

Get in touch with the Dodge Engineers and have them explain to you the safety, the efficiency, economy and the manufacturing standard which is possible only with the Dodge split friction clutch. If you would like further and more detailed information on the subject, we have an excellent book which is yours for the asking.

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Everything for the Mechanical and Economical Transmission of Power

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Minneapolis
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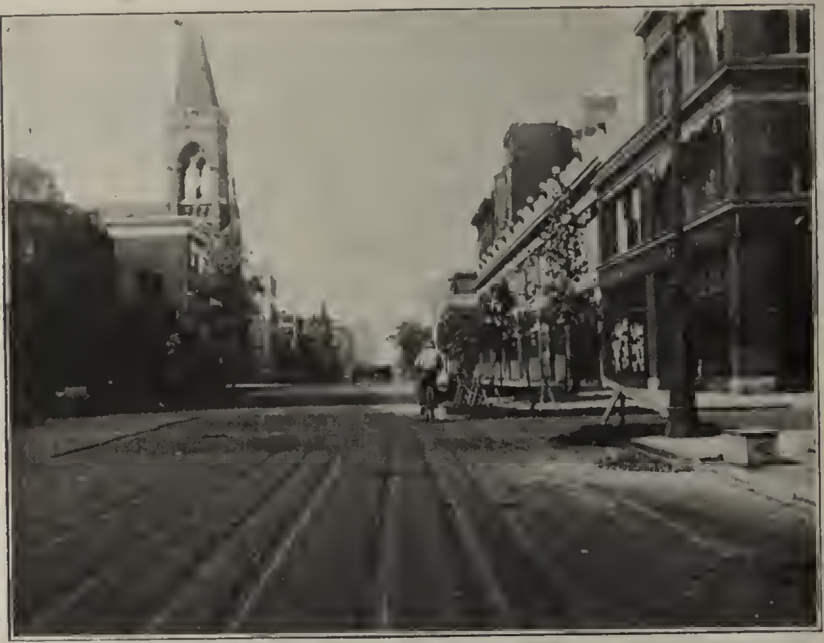
portance of proper engineering supervision. The appendix gives the method for inspecting and testing paving brick as recommended by the American Society for Testing Materials.

DEMANDS BETTER PAVING SYSTEM.

Ruts in Asphalt Pavement on Michigan Avenue, Chicago's Famous Drive, Show Need of Brick in Hot Weather.

Michigan Avenue, Chicago's famous boulevard, over whose surface a greater automobile traffic is maintained, in all probability, than any other street in the world, was made a "rocky road" during the early part of August, 1913. A trip down this well-known thoroughfare was, at that time, a matter that required considerable skill on the part of the chauffeur and even more patience on the part of the passenger. The ruts shown in the accompanying illustration were, in many cases, two inches deep, measuring from the regular paving level. The ridges rose from one to one-and-one-half inches, making an incline of about three-and-one-half inches, up and down which the wheels skidded with great regularity.



Michigan Avenue, Chicago, Looking North from 21st Street. Asphalt Pavement is Shown To Be Badly Affected by the Heat. Photo Taken Aug. 12, 1913.

The photograph was taken August 12th, 1913, and shows the block between 20th and 21st streets. The pavement was repaired as soon as the street paving authorities could "get around to it." This was not, however, soon enough to beat the "Brick & Clay Record" reporter and his trusty camera.

The Michigan Paving Brick Company, owner of the plant at Omer, Mich., may consolidate with the Saginaw (Mich.) Brick Company, plans to that end being under consideration at the present time. The Omer plant has been idle for several months.

An additional kiln added to the battery at the plant of the Ashtabula Shale Brick Company gives a daily capacity of 25,000 pavers. This concern recently booked an order for 1,000,000 pavers to be used in home street paving work.

Common Brick Production for 1912.

According to the annual report of the United States Geological Survey, the total production of common brick in 1912 was 8,555,238,000, as against 8,475,277,000 in 1911. The valuation of the 1912 product was $51,796,266, as against $49,885,262 in 1911. Illinois ran a close second to New York, the latter producing 63,000,000 more than the Middle West state. Pennsylvania came third and New Jersey fourth.

IN THIS NUMBER—THE SILO AND HOW TO MAKE IT PERMANENT

BRICK and CLAY RECORD

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GEORGE W. THURSTON

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Classified Ads Pages 848-850

CHICAGO, OCTOBER 21, 1913

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rick and Clay Record" Has Double the Paid Circulation of Any Other Clay Journal Published

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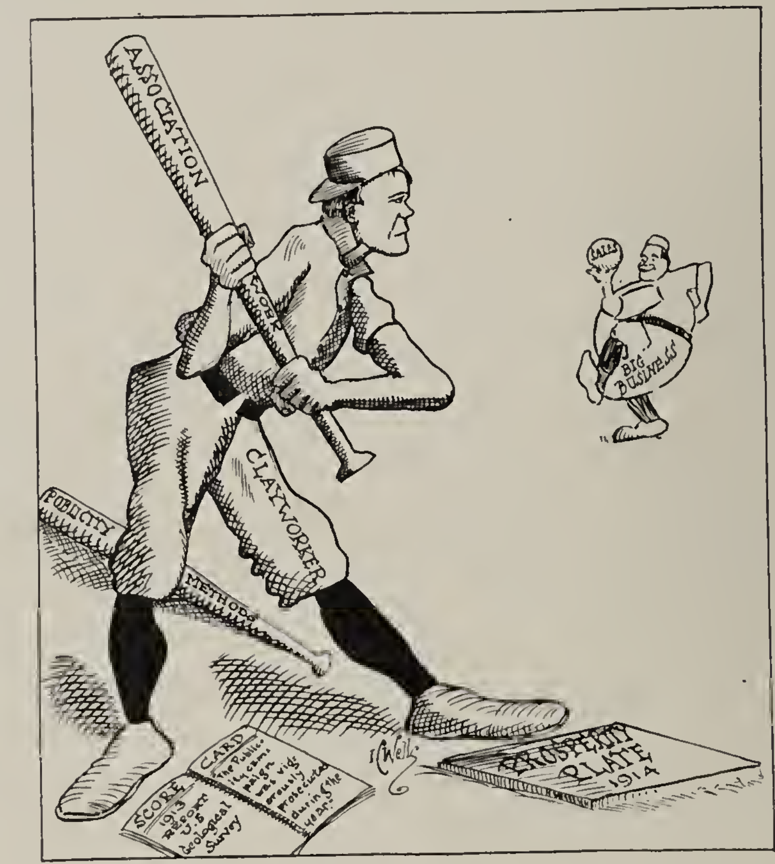
BRICK AND CLAY RECORD, 445 Plymouth Court, CHICAGO

The Editor's Corner

A Department Wherein is Set Apart Comment and Opinions on Some of the Graver Problems Confronting the Clayworker and Co-Laborers

IN THE report of the United States Geological Survey just issued the Government experts go on record as saying that a combination of BURNT CLAY AND STEEL is the BEST fireproof material and that the "Enormous fire loss can BEST be MET by the erection of the fireproof structures."

MAKE IT A "HOME RUN"!


ASSOCIATION
WORK
CLAYWORKER
PUBLICITY
METHODS
SALES
BIG BUSINESS
SCORE CARD
1913 Report U.S. Geological Survey
The Publicity campaign was vigorously prosecuted during the year.
PROSPERITY PLATE 1914
Wells

When it is understood that the Geological Survey does not concern itself about clay products alone, but the scope of its investigations and its scientific researches is extended to EVERY mineral, INCLUDING cement and concrete, and that from its department bulletins are issued annually for THESE industries in the same maner as for the clay product industry, the SIGNIFICANCE of this indorsement is apparent.

This portion of the Geological Survey's report is most interesting to the clay worker and undoubtedly every progressive manufacturer of burnt clay will procure a copy of the report, which he may have for the asking, and use it EXTENSIVELY in his selling campaign.

There is another portion of the report, however, which is interesting, aside from the many complimentary things said about the industry—included in which is the statement that in 1912 the industry showed an increase of $10,000,000 over the sales of clay products the year previous.

Reference is made to the Government expert's EXPLANATION as to the CAUSE of the great increase in the sale of clay products.

Can you guess it?

On this same page there is a cartoon. The artist drew it with the idea of attracting your attention to the theme of this editorial. He selected the subject of the great national pastime—base-ball, because he knew it was a subject UPPERMOST in the minds of the average reader and especially just now as the post season series of the two great leagues has been brought to a close.

The artist figured, naturally, that a subject which appealed to EVERYONE would be more likely to ATTRACT attention and he WANTED TO ATTRACT YOUR ATTENTION to this page.

That our friend, the artist, has succeeded, is shown in the fact that you are now reading these paragraphs. But he has done more than he set out to do. He not only has attracted your ATTENTION, but he almost has told with a few bold strokes of the pen what is going to take several hundred words of type here to tell.

Let us analyze the cartoon.

You see standing at the home base—the PROSPERITY PLATE FOR 1914, a figure that represents the CLAYWORKER—a composite of all the several branches of the clay product industry. Despite the caricature, the Clayworker is shown to be an aggressive sort of fellow, his jaw protruding suggestively, and every fibre of his well-trained body ready for the ball—the SALES, that the pitcher—BIG BUSINESS, is going to "Put over the plate" the coming year.

Securely grasped in the Clayworker's hands is the Bat of Co-operation—the Associations that have been formed to advance his interests.

The artist has shown clearly that if the Clayworker USES his bat with UNERRING aim he will send the ball over the fence for a HOME-RUN.

This brings us, now, back to the United States Government report.

The Government expert declares that the great increase in clay products in 1912 was due entirely to the ACTIVITY of the manufacturers in a PUBLICITY campaign.

Further, the Government expert declares, the year 1913, because of this publicity work, will show even greater prosperity for the clayworkers, when this year's statistics are tabulated, which, unfortunately, will not be until next Fall.

This statement brings considerable cheer to this journal because "Brick and Clay Record," almost single-handed, has conducted a campaign to interest the clayworkers of the Nation in letting the great buying public KNOW WHAT they are making and HOW to USE it.

This journal, always more or less active along this line, inaugurated a persistent and consistent campaign a little more than a year ago and has kept at it with a firmness of purpose that has brought criticism from many of our friends who were of the opinion that we were giving too much space to one subject and not enough to others.

For a time the results were discouraging. For a season little impression was made. Gradually, however, there was an awakening. Slowly the clayworkers began to ACT.

Here and there came a report from some manufacturer who was trying out a publicity campaign.

Later, the movement became more widespread.

Not only did the INDIVIDUAL plant owner take up the work, and to his profit, but the clayworkers COLLECTIVELY became interested.

Today the clayworkers of the Nation are ADVERTISING. They are letting the people KNOW what a GOOD material they are manufacturing. They are letting the people KNOW HOW to use this material advantageously.

This movement is not confined to any one locality or to any one branch of the industry. The Pacific Coast is alive. The Atlantic Coast is alive. The Southern clay plant owner and the Middle West manufacturer is on the alert. The Canadian is keeping step with his cousin in the "States."

The publicity campaign has reached such a stage this Fall we find several of the larger companies conducting a NATIONAL campaign, one of which is expending ONE HUNDRED THOUSAND DOLLARS in presenting its arguments to the readers of the popular magazines and the daily newspaper press.

It has grown to such an extent that some of the great National associations have broken the precedent of YEARS and, instead of holding annual conventions in the WINTER season and reading long, tedious papers on manufacture and the like, and spending days patting each other on the back, they are holding OPEN-SEASON meetings.

No CONVENTION business is transacted—no papers read—no soft taffy given each other—no methods of manufacture are discussed at these sessions.

What do they do?

They conduct a school of INSTRUCTION—a sort of congress where people to whom they EXPECT to sell are invited to come and learn HOW to use the material they are manufacturing.

The clayworker has been CONVERTED.

The old order is a thing of the past.

Today he BELIEVES in CO-OPERATION—he believes in the right sort of ASSOCIATION work—he believes in judicious PUBLICITY to let the people know WHAT he is making and HOW to use what he makes.

Cut throat competitive methods also are being relegated to the back shelf. The OPEN-PRICE policy already has been seized by two great National Associations.

Another great National organization is seeking to solve the cost of manufacture, as well as the selling end.

Look where you will—in whatever branch of the great clay product industry you may choose, and you see ACTIVITY.

Is it any wonder this journal takes a just pride in the report of the Geological Survey of the United States? Is it any wonder that this journal has a feeling of a DUTY well-performed?

But note this: If, as the United States Government says, the unusual increase in clay products in NINETEEN-TWELVE was due to this "Vigorously conducted publicity campaign," what will the report for 1913 show?

It was not until THIS year that the clayworkers REALLY got into the game and PLAYED it.

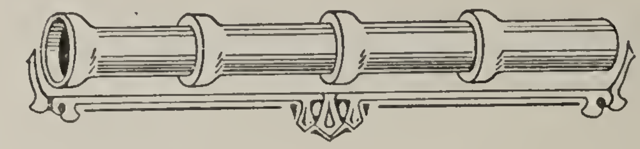
Reports from correspondents of this journal in every section of the country show that with one single exception—the drain tile field, THIS year has been a record-breaker.

A dry season was a handicap to the drain tile man. The farmer, with truly characteristic lack of foresightedness, does not tile his land until a rainy season, any more than does the shortsighted man patch his roof until it rains.

But the tilemaker is an exception. The face brick manufacturer has had a banner year. The paving brick manufacturer has stripped his yard and has been unable to keep up with the demand. The potter, the refractories, the sewer pipe maker and all the rest are feeling most optimistic over their season's work.

If 1913 has been so good with this team work—this association effort—this local and national publicity work, what can the clayworker EXPECT of 1914, providing he continues to be aggressive and continues to SEEK business rather than to WAIT for it, as he has been doing in previous years?

The cartoonist has given you a suggestion. Let us "Hit 'er out for a home run!"



WHEN a man succeeds in business he does so because he has sold what he has to sell at a price that is greater than it costs him to buy or produce it. Failure is due, largely, to the fact that he has UNDERSOLD cost.

One may say that he has failed because he has not found customers. That is but ANOTHER way of saying that he has been doing business on the WRONG side of the ledger.

Naturally it costs more to maintain an organization or business with a THOUSAND dollars in sales than it does to run the same business or organization with TEN THOUSAND dollars in sales—that is proportionately.

Therefore, the element of cost enters into the cause of the failure where one "fails because of a lack of customers," just the same as it does under any other conditions, for the expense of maintaining his business has been greater than the receipts.

ACCURATE KNOWLEDGE of cost is essential to any business. This is true with the clayworker as well as with the merchant or the railroad man.

When a selling price is premised on the ABSOLUTE KNOWLEDGE OF COST, plus a fair profit, and the product moves freely at that price, business success is assured.

A selling price, based on any premise other than an accurate knowledge of cost, either will be TOO LOW to reap a benefit or high enough to invite OVERPRODUCTION.

The manufacturer of face brick has suffered grievously from both.

Once, dazzled by the dangling bag of gold that hung at the end of the rainbow of Prosperity's promise, he seized the opportunity offered him and followed the lure of high prices.

For a time he did well. But a business built on such a foundation is sure to topple.

The buying public—always fickle, balked. Overproduction followed as the natural sequence.

Today, the other condition exists. The face brick manufacturer is selling TOO CLOSE to cost.

And the alarming feature of it is that so few KNOW it.

It would seem that no sane business man wittingly will sell his produce for LESS THAN IT COSTS HIM TO PRODUCE IT.

Still, there are some brickmakers who set their selling price at what they THINK their product OUGHT to bring, or at what SOME COMPETITOR is SUPPOSED to receive for HIS material, ignoring the fact that the competitor may be manufacturing at a much LOWER cost than they are.

These same brickmakers, unconsciously, are gamblers of the most desperate type. They are taking long chances at odds that no card shark or race track tout would look at.

The race track gambler has his dope sheet and has a record of the past performances of his horse to guide him and he has a reasonable belief that this same horse will perform again in the same manner, providing conditions are not AGAINST him.

But not the brickmaker. He starts out to make brick. He fixes his selling price without considering cost.

As a fact he probably does not know what the cost is. He knows that someone a hundred miles away is getting such and such a price. It looks like a reasonable price—and may be in that locality. So he adopts that price, without any knowledge of whether his conditions warrant it.

In another page of this issue of "Brick and Clay Record" there is a report of the activity of the recently organized American Face Brick Association in trying to interest its members in establishing an ACCURATE cost system in their plants.

It is a worthy effort and it is to be hoped that Secretary Hollowell will succeed in accomplishing his ends.

The American Face Brick Association is an aggressive organization. It has taken hold of the work it has mapped out with a determination to accomplish SOMETHING.

Its effort to get members to establish cost systems is VITAL, because the SUBJECT is vital.

And the fact that this great organization of face brick manufacturers has inaugurated a campaign of this nature, proves the fact that the present system of manufacturing and selling by guesswork, is HURTING.

It proves that the brickmaker now realizes that he must conduct his business on BUSINESS principles.

He cannot afford to GUESS. He cannot afford to GAMBLE.

He must KNOW his cost. He must KNOW to a fraction of a cent what every thousand brick he makes COSTS him to PRODUCE and to SELL, and he must FIX HIS PRICE BASED ON THAT KNOWLEDGE.

* * *

IT is more than likely that the next annual convention of the National Brick Manufacturers' Association will be held in Buffalo, N. Y. This information comes from members of the executive committee and, it is understood, meets with the approval of Secretary Randall.

That it is an appropriate meeting place cannot be denied. Buffalo is a hospitable city. It has excellent hotel accommodations, a commodious convention hall and offers a wide variety of entertainment and many sight-seeing places.

But there is more than this to Buffalo as a meeting place.

First, it is not too far away from the center of the clay product field to make it inconvenient to the great majority of those who find the annual sessions profitable.

Second, it is close to the Canadian boundary line and that means our Canadian brothers with whom we desire a closer acquaintanceship, will cross the border in large numbers and give their support to the convention.

We have not forgotten the special train, the big delegation and the kilty band that came all the way from the Far North last March and made things lively for us here in Chicago at the 1913 convention.

The Canadians are a wide-awake, live crowd and we need them with us. If for no other reason than this, by all means let us go to Buffalo.

In the November 4 Issue

There will be a special feature on the Creosoted Wooden Paver Block as used in Chicago, with numerous illustrations showing how this form of paving has failed to stand the wear of the city's traffic

Elbert Hubbard Says: "The Mark of Sanity is Co-operation"

FRA ELBERTUS, THE ROYCROFTER
FROM EAST AURORA, PHILOSOPHIZES
FOR THE BENEFIT OF "BRICK AND
CLAY RECORD" READERS ∴ ∴ ∴

"THE more people you can work with and for, the bigger and better you are," says Hubbard. And this is the doctrine this journal has preached to its readers consistently for years. "Get together, brick-workers!" has been the cry, and one only has to look over the field today to see how good this advice has been. Elbert Hubbard has said many good things, but none better than he has in this article.

NOT long ago I visited the State Hospital for the Insane at Kalamazoo, Mich.

Walking over the beautiful grounds half a mile from the main building I came across an attendant in charge of twenty-five patients.

The attendant was a little man, a sort of half portion. Many of the patients weighed twice as much as he.

I walked along with him for some distance and in the course of our conversation I said: "I don't want your job. What is to hinder half a dozen of these big fellows getting together and setting up a job on you? If they would get at you all at once you would not stand any show at all. There is no help within half a mile and you are not armed."

He looked at me in rebuke and remarked: "You belong here, all right! You ask what is to hinder these fellows getting together and setting up a job on me? Why, the fact is if they could get together with anybody or anything they would not be here. That is their trouble. Nobody is ever sent to an insane asylum who can do team work."

The badge of sanity is the ability to co-operate with other people; and the more people you can work with and for, the bigger and better you are. It is an age of organization. Just now there are three big words. These are Reciprocity, Mutuality, Co-operation. And where do you find their principle carried out more than in your specialized trade paper?

Competition may have been the life of trade once, but it is no longer so. Competition died when the inventive genius of American engineers devised machines that should manufacture beyond the present economic wants of the people. Competition then became suicidal and destructive, and anything that is suicidal is dying—dead.

We have passed through the savage stage, the stone, the competitive, and now we are passing into the co-operative. We will not be here so very long, anyway, and soon Death, the kind old nurse, will come and rock us to sleep—and we had better help one another while we may.

The idea of the brotherhood of man is no idle, vacuous dream; and this ideal of brotherhood is coming about, not through the preaching of ethics or morality, but it is coming about as a matter of self-preservation.

Civilization is the best way of doing things. Civilization means the civil way, the mental, courteous, helpful way.

There is a natural tendency to specialize these days. The man or firm who manufactures or sells one or more products, be it soap or shoes, pianos or cabinets, should know their business. If they know it less than from A to

Izzard they should busy themselves and get down to the source of supply (information)—their trade paper, and absorb with interest and studiousness all the meaty things found there pertaining and relative to their specific trade or craft. The specialized trade paper co-operates with, and reflects to, manufacturers and dealers, the good—the best means to a successful end. Co-operation is most essential to business life.

Simply because one is in the same line of business as another man is no reason why he should attempt to destroy him. A certain amount of mutuality is absolutely necessary to live. Increased consumption is the rule in every line of human endeavor.

There are bigger markets than the world ever before offered, and there is bigger pay for the man who can eliminate the grouch, get rid of his grab instincts, and regulate his gobble and guzzle. That is, don't over-eat, don't over-drink, smoke one cigar at a time, think well of everybody, especially yourself.

Be proud of the business you are in. Stand by the whole fraternity. Don't knock competitors. I have noticed this, that the smaller a man's bean the more room there is in it for peeve. Little peanut men live by themselves; they do not read their trade paper. They think they have secrets, and they are afraid of somebody getting the secret away from them. The fact is, however, we only grow as we give, and anybody who locks the world out shuts himself in.

I know hundreds of highly prosperous business men, manufacturers, dealers, jobbers, craftsman, and I cannot recall a single instance in which the mentally successful man does not read his specialized paper. He subscribes for it and he pays for it promptly. In many instances he orders extra copies from time to time and distributes them. He is boosting the whole game all along the line. And this very fact puts him in a frame of mind where currents of success come swirling in his own direction. He is moving on the eternal tide of progress.

When you subscribe for your trade paper and assimilate it, you are uplifted, inspired, given courage, pep, intellectual vim and vigor and enough trade information to make you free from the trials and tribulations which beset the man who "doesn't know."

These things all have a direct influence on the bank and mental balance.

The Trade Paper binds everybody in the business into a fraternity, which spells length of days, because it "serves" and its service is based on specific knowledge.

Copywright, 1913, Kovnat Adv. Service.

Information Wanted

Are you taking advantage of the "Question and Answer" Department of "Brick and Clay Record?" This is one of the most valuable aids to the clayworkers imaginable. Readers of this journal have the privilege of getting the advice of the world's best authorities on any subject they select, and without cost. If you have a problem of manufacture to solve put the question up to the "Brick and Clay Record" experts.

His Slogan a Familiar Quatrain

Being an Appreciation of a Man Who is "Up and Doing" Three Hundred and Sixty-Five Days in the Year

George W. Thurston

Secretary Western Paving Brick Manufacturers' Association

WHEN George W. Thurston entered upon his duties as secretary of the Western Paving Brick Manufacturers' Association less than two years ago the first thing he thought of was to get a suitable motto to hang up in the Association's headquarters in Suite 500 Ridge Building, Kansas City, Mo., since outgrown and vacated for larger and more commodious quarters.

He visited all the postcard shops and he haunted all the picture stores, but he could find nothing that seemed to fit. One day—and the biographer declares it was the morning he raised the rolling top of his desk for the first time, there came to his mind one verse of six trochaic feet—all he could remember from the days of his grammar hall experience.

"That's what I want!" he is said to have exclaimed, and rushing to the nearest printer he had the little verse suitably displayed in gold leaf. With an equal amount of energy he hurried to the picture framer and had the motto encased in an attractive moulding. Then he hung the motto in a conspicuous place in his office, pulled off his coat and began to follow its admonition.

The motto was from Longfellow's poem and runs: "Let us, then, be up and doing." Whenever things are not going just right Mr. Thurston is said to take a squint at those eight syllables of rhythm and the dark clouds of despair roll away, for he is reminded of his duty and his duty means hustle and hustle means more brick pavements and more brick pavements make Mr. Thurston happy.

One glance at the map of that section of the Great West in which Mr. Thurston and his men work convinces one that the little motto has been followed faithfully. Certainly someone interested in the promotion of vitrified paving brick has been "Up and doing," and if you ask any of the manufacturers whose product stretches over many, many miles of the Western states you will discover that they accuse George Thurston of being the "guilty person."

When Mr. Thurston accepted the task of putting brick into the highways of the West it is doubtful whether he knew the difference between a vitrified paving block and a building brick. He was born a salesman, however. He had been selling something all his life. More recently he had been in the managerial department of one of the largest transportation companies in the country. That helped some—it helped, in fact, a lot.

Mr. Thurston realized, however, that whatever you had to sell the only way to sell it was to let the fellow you wanted as your customer know you had it to sell. So he began a campaign of education. The printer was called into play. Literature on the advantages and superiority of vitrified paving block was issued in quantities and distributed. One pamphlet after another appeared and these were given wide distribution.

Then Mr. Thurston, realizing that the proposition was not a one-man proposition, gathered into his fold seven spirited and aggressive salesmen to aid him. Showing each of these the motto that hung in a conspicuous place in Suite 500 he told them to follow its advice.

George Thurston never does anything by guess work. He is methodical and whatever he has done has been done because he planned and designed to do it. And, after he has laid these plans, he starts out to see that they are accomplished and they are.

He uses aggressive methods because he is aggressive himself. Still, his policy is never radical. Conservatism marks every aggressive move. He is sure-footed. There is never any sudden plunge into unknown depths. There is no yawning abyss ahead.

George Thurston has done and still is doing a great work for the paving brick industry in the West. It is a pity that there are not many George Thurstons in the clay product industry.

One of Buffalo's Great Attractions—Niagara

N.B.M.A. May Meet in Buffalo

"ELECTRIC CITY" SAID TO HAVE BEEN SELECTED FOR NEXT CONVENTION

BUFFALO is to get the Twenty-Eighth Annual Convention of the National Brick Manufacturers' Association which meets sometime in February. Members of the executive committee are said to have so determined and Secretary Randall also is said to favor that city. The official announcement, probably, will be made shortly and the clayworkers will begin to lay their plans for the yearly pilgrimage.

No verification of Buffalo's choice has been obtainable from members of the executive committee, although Secretary Randall is quoted as having made the statement to several members of the Association within the past few weeks and C. A. Bloomfield, president during 1912, writes "Brick and Clay Record" that in all likelihood the convention will be held there.

Several cities were bidding for the convention, chiefly among these being Atlanta, Ga., and New Orleans, Cleveland and Detroit were other cities that were mentioned frequently in connection with the meeting, but it is understood that neither of these put up much of a fight.

Buffalo has been the convention city once before, the Eleventh Annual meeting being held there Feb. 2-4, 1897. R. B. Morrison, of Rome, Ga., since dead, was the president at that time, and the convention often has been referred to as one of the most profitable and most pleasant ones in the history of the organization.

Buffalo lies directly north of the great Pennsylvania clayfields, to the east of the Ohio fields and to the west of the great Hudson River district.

There is ample accommodation for convention visitors in Buffalo, it being noted for its hotels. There also is great convention halls, where the sessions may be held without cramping.

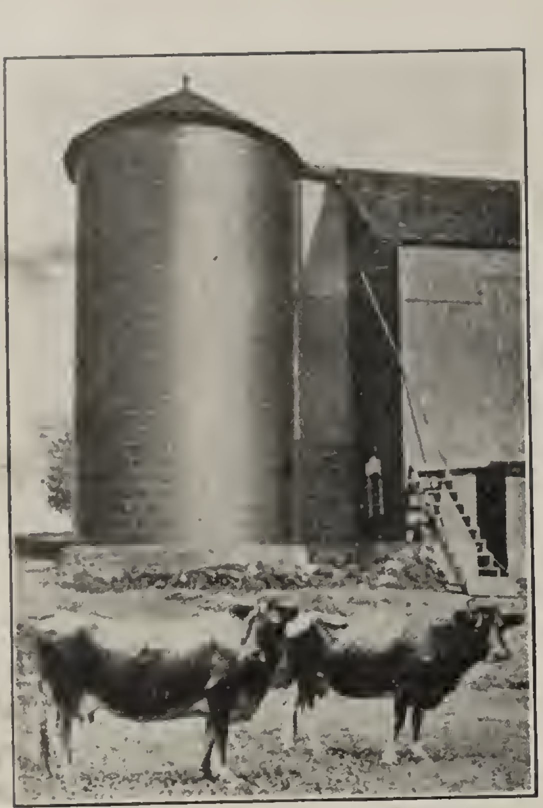
As a place for the visitors who wish to take advantage of the opportunity to mix a little recreation and pleasure with the week's session, there could be no more desirable city chosen. Aside from Niagara Falls, one of the real natural wonders of the world, and the great electrical power development, there are many pleasing excursions, a great park system, ideal streets and a number of side trips, both by boat and train, that can be taken cheaply and conveniently.

The Convention in February will be marked by the absence of several of the other annual meetings which have made it an annual custom to meet with the parent body. This is particularly true of the National Paving Brick Manufacturers' Association and the American Face Brick Association, both of which organizations feeling that it was better to hold their sessions during the "Open season," already have met. These, however, may hold adjourned sessions.

In addition to the other organizations that will hold sessions at the same time, there will be the first annual session of the Supreme Temple of the Ancient Order of Chaldeans, the secret society among the clayworkers of the Nation organized under such auspicious circumstances at the Chicago convention in 1913. The first local temple —Chicago, No. 1, was installed at that time with a membership of nearly 500 and the initiatory ceremonies and the banquet and entertainment that followed are still fresh in the minds of those that took part.

It is the purpose of the Chaldeans to make this coming session of the Supreme Temple a still more enjoyable feature of the Convention week's pleasures and already plans for the entertainment of its members are under way.

Buffalo Temple will be formed at this session and it is expected that its membership will rival that of Chicago.



The Silo—How to

A COMPARISON OF THE BURNED CLAY, CONCRETE AND WOODEN SILO, WITH RELATIVE COST OF EACH STYLE AND METHODS OF CONSTRUCTION

An Item of Cost

FIRST COST—A silo built of reinforced burned clay, under the best form of construction, costs a trifle more than wooden staves of the cheaper woods—yellow pine or the like, but a trifle less than one made of cypress or redwood. It is considerably less expensive to build as compared with the best form of concrete construction. Actual figures submitted by farmers who have used all those constructions—hollow clay tile, wooden staves and concrete, declare the burned clay silo costs from $50 to $150 less to construct.

UPKEEP—With the burned clay silo there is no expense for repairs or other maintenance cost. Once erected, the burned clay silo is there to stay and never requires repainting, repairs, hoops, or any attention whatever. It is, in addition, fireproof, frost-proof, storm-proof, acid-proof and time-proof, none of which is either wood or concrete.

THE modern-day farmer does not need be told the advantage of storing up his green feed for the Winter's use. This he has learned. What he WANTS to know is HOW to store it so that it will preserve its succulent condition until it is used, and HOW to build a receptacle that will be DURABLE and which eliminates maintenance cost.

Fifty years ago ensilage was stored in a pit in the ground. This method soon was discarded. The first silo was built in this country in 1876. It was a square wooden bin erected in the barn. Because it was impossible to pack the ensilage properly in the corners and because the bins were not air tight this style also was discarded.

Then came the round silo built of wooden staves. For many years this form of construction has been popular because it was the best known. Its first cost construction—its failure to keep out the frost—its short life, its tendency to topple over in the slightest wind storm—its lack of air-tightness due to the shrinkage in dry weather and its expansion in wet—these and other serious faults have proven its unworthiness.

Of recent years concrete was proposed as the proper solution. Immediately tons of literature were poured upon the farmer and rural contractor, exploiting its merits.

Properly constructed concrete makes a fairly successful silo, despite its tendency to crack and crumble under severe weather conditions. However, to construct concrete silos properly takes an expert or professional manufacturer of concrete silos and the first cost makes them out of the question.

The construction and manipulation of the forms for building a concrete silo are so difficult the average rural contractor cannot successfully build one and should he succeed in making a fairly good job the farmer who has invested anywhere from $75 to $400 more than would be necessary to build one out of more substantial material, finds he has a silo that is affected by frost, by the acid in the ensilage, and that soon it will begin to show signs of deterioration.

Shortly after the advent of the concrete silo came the imperishable burned clay silo. This form of construction has solved all the difficulties met with in all the others and, at the same time, is the cheapest in first cost—has no maintenance and has been declared by State and Federal authorities to be the only practical, successful way of storing ensilage.

It is the purpose of this article to tell how these may be built—even by the farmer himself, or by his local mason, as the form of masonry is of the most common type.

THERE are just two elements that enter into the construction of a silo—absolute certainty that the receptacle will keep the ensilage from rot or mold and that it will be durable. If either one of these elements are missing the profitable silo.

To insure the first element the silo must possess the following qualifications:

FIRST—It must be airtight. If air is permitted to reach the ensilage it spoils and is unfit as feed.

SECOND—It must be frost-proof. If the ensilage is allowed to freeze it deteriorates and cannot be fed to cattle.

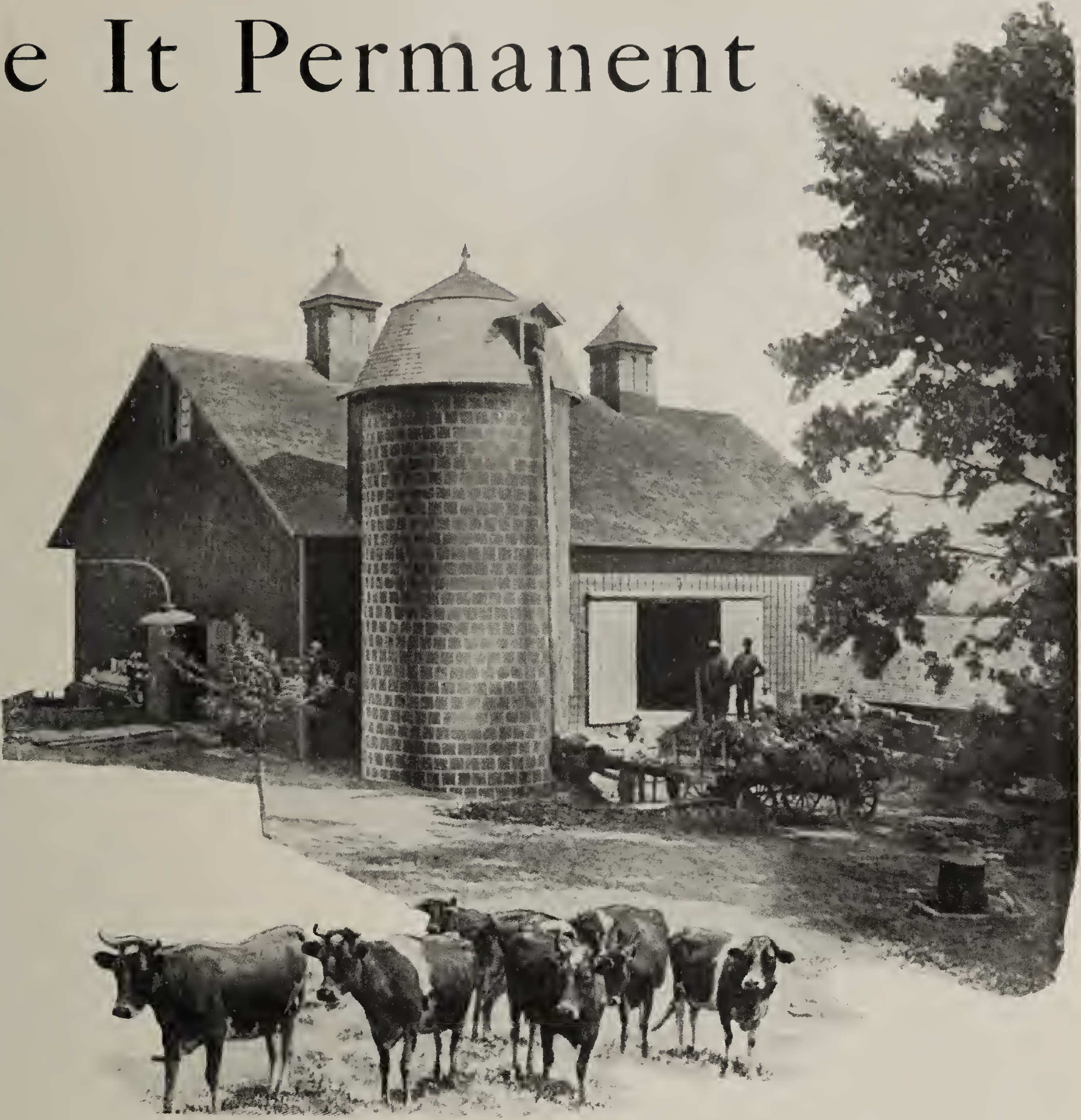
THIRD—It must be moisture-proof. An excess of moisture causes the ensilage to rot and rotten feed is poisonous feed.

It will be seen, then, from these statements, that any silo that does not fill each one of these three qualifications is not a practical silo and, therefore, must be placed in the

Make It Permanent

impossible class, for what profit is to be found in investing in something that is useless?

The second element in the construction of a silo—durability is almost as important as the other. To insure this the silo must have these qualifications:



An Up-to-Date Silo Built of Burned Clay Hollow Tile Block—the Imperishable Material

FIRST—It must be time-proof. Any building that defies the ravages of times and lasts for an indefinite period is an economical building. Permanency in silo construction, therefore, is just as essential as in the skyscraper, the factory, the residence or the farm house.

SECOND—It must be storm-proof. The peculiar shape of the silo—cylindrical, affords ample opportunity for the wind to topple it over, not only destroying the silo itself, but also the contents. The silo, for this reason, must resist even the most severe storms.

THIRD—It must be fire-proof. No building that is supposed to have permanency should be constructed of inflammable material. The ideal silo, as well as the ideal farm building or farm house, is the one that best resists fire.

FOURTH—It must be acid-proof. The chemical action of the ensilage during its fermentation is disastrous to most materials and causes rapid deterioration.

Summing up the necessary qualifications for the perfect silo we find that it must be able to keep the air out of the ensilage and to prevent the air within from escaping. That it must be so constructed that it will prevent the ensilage from freezing and that it must be impervious so that no excess moisture can get to the ensilage and that the moisture in the corn, so necessary to fermentation, will not escape.

Further, we find that it must be able to resist storms, that it resist the ravages of time and that it resist fire.

With a silo constructed in such a manner that each of these requirements are insured we have one that will give the greatest possible efficiency and prove a blessing to its owner.

It is the purpose of this article to describe just such a silo—a feed receptacle that meets with each and every one of these requirements.

This silo is not built of wood, because wood is not air-proof, time-proof, frost-proof, moisture-proof, fireproof, decay-proof, storm-proof nor acid-proof.

This silo is not of concrete, because concrete is not air-proof, time-proof, frost-proof, moisture-proof, fireproof, nor acid-proof.

This silo is one that is built of burned clay—the material of the ages—enduring, imperishable, everlasting—a material that withstands the storms, the floods and fire—that resists acids, moisture, frost and heat—a material that costs less to use, nothing to maintain and which the experience of thousands of years has proven its inherent worth.

There is no guess work about burned clay—it does not depend upon chance to make it perfect. It is a known

A Burned Clay Silo Built of Vitrified Paver Block, a Much Cheaper Form of Construction Than Concrete or Cypress.

quantity and passed the age of experiment when the world was young and civilization in its infancy.

That burned clay is durable one only has to point to the enduring monuments built of brick and block that have withstood the ravages of centuries in the European countries, or to the fallen ruins of the ancient cities of the Chaldeans and the Babylonians which have been unearthed in recent years and show the sunbaked brick, pots, urns and household utensils of those periods—three to four thousand years before Christ, still to be in a perfect condition.

That burned clay is impervious to moisture one only has to point to the vitrified pipes used almost exclusively in sewer construction, the vitrified blocks used in paving and to the numerous other forms of vitrified clay, whose service, where moisture is to be checked, has proven of such great value.

That burned clay is frost-proof is shown by the great popularity this material has for building purposes in general.

How does the cost of the burned clay silo compare with the wooden staves or concrete silos?

The hollow clay tile block costs a trifle more than a stave silo made from the cheaper woods—yellow pine and tamarac, but less than those made of the more durable woods—cypress or redwood. The same is true of the paver block and the hard-burned common brick.

The comparative cost between the burned clay silo and the concrete is far in favor of the former. The elaborate scaffolding and form work necessitates a carpenter and lumber bill that makes the concrete silo almost prohibitive.

The first cost, however, is not to be considered. Durability and maintenance are the factors determining the actual cheapness of any article that must be used for an indefinite period.

The hollow clay tile silo, even if it cost more to erect, is the cheapest in the long run for these reasons:

It never requires painting.

It never requires re-erection, straightening or replacing on foundation after storms.

It never requires tightening of hoops, for it has none.

It never requires a cent of repairs, nor a penny's upkeep after it is once built.

It is never affected by wind, frost, heat or acids.

Compare these items with the cost of upkeep of a stave silo. If built of cheap wood, such as yellow pine or tamarac, the silo will usually be painted when erected, again in three to five years, and sometimes the silo seems well enough preserved to warrant painting a third time. The cost will vary with the size of the silo, but will seldom be less than $20 each time for two coats, and painting a large silo will cost much more.

Thus, in the one item of paint, the purchaser of the cheap stave silo often pays out the difference between its first cost and the first cost of a hollow clay tile silo. If he buys a good stave silo, the first cost will be as great as the burned clay silo and to this must be added the cost of upkeep.

But painting is not the only expense incurred in maintaining a stave silo. A stave silo is practically a great barrel. If the hoops become loose enough to allow one stave to fall in, the whole structure collapses. To prevent this the owner must watch his silo during the summer when it is empty and at the proper time must get out his extension ladder and tighten the hoops.

Perhaps the weather is hot, the threads on hoops and burrs rust and other work demands attention. Perhaps the owner cannot work on a shaky ladder twenty to forty feet from the ground. Anyway, it is always an unpleasant and more or less dangerous task.

The entire time required to keep the hoops tight should be charged to cost of upkeep. Even with the best of care many stave silos are wrecked each year by severe wind storms, many more are blown down and must be re-erected, while others are twisted out of shape and should be straightened. These repairs cost time and money and should also be charged to cost of upkeep. It is better to purchase a burned clay silo at first. Then the summer may be dry and hot and the winds may blow, but the owner has a feeling of security which the owner of the tottering stave silo cannot feel, while the expense of painting or the necessity of apologizing for the unsightly appearance of the silo will be avoided.

Compare the burned clay cost items and maintenance with the one built of concrete.

The first cost is in favor of the hollow clay tile block.

The upkeep is in favor of the hollow clay tile block, because there is none, this silo being imperishable and everlasting, while the action of the acid in the ensilage, the weather and the ravages of time, affects concrete, causing it to develop early cracks, to chip off and finally deteriorate and crumble away.

The appearance of the silo is in favor of the hollow clay tile silo, because it is composed of units like a brick house and the contrasting motar joints give it a pleasing surface. Concrete, on the other hand, has unsightly "form

There are three forms of burned clay adaptable to and used in the construction of silos. Each of these are of vitrified clay—that is, a clay or shale of unusual hardness, closely resembling slate or rock in its nature, and which has been subjected to a continuous heat for several days reaching at its height from 1,800 to 2,200 degrees Fhr., depending upon the quality of the clay.

These three forms of vitrified clay are the hollow tile block, the paving block and the hard-burned common brick.

The hollow tile block, more extensively used, is curved and radial end-cut. Its special shape makes a perfect circle in which no open joints are possible.

The paving block, because of the isolated location of the manufacturing plant, is not generally used, although it is a popular silo material in those localities close to a plant. The paving block is the same that is used to build city streets and country highways and its imperviousness and durability are well known.

The hard-burned common brick is least popular of these materials and is seldom advocated only in those localities where an unusually hard burned brick is made.

In each of these three forms, the burned clay is re-inforced by the use of steel wires laid within the material. This treatment makes an absolute rigid construction and should be included in every specification.

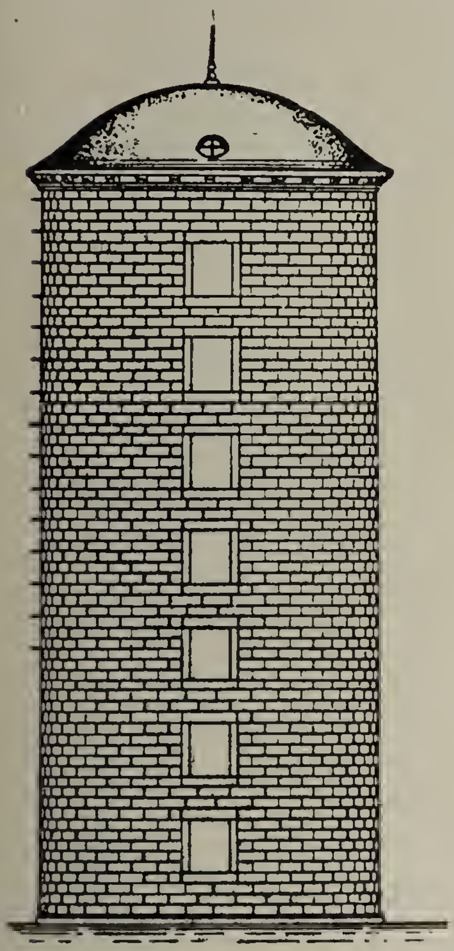
THE SIZE OF THE SILO.

In planning a silo it is necessary first of all to determine the size. There should be as little of the element of guess work about this as possible.

That the selection of the size is an important problem is shown by the bulletin on burned clay silos issued by the Iowa State Agricultural Experiment College. The following is quoted from this pamphlet:

"The quality of silage improves as the depth increases, due to the weight above. The usual silo today is 30 or more feet deep. A larger percentage of mouldy and otherwise inferior silage is found near the top of a silo than at the center or near the bottom, proving that a certain weight is necessary to compress the silage and exclude the air so to insure its perfect preservation. By building a deep silo a greater percentage of good silage is obtained, which is, of course, a matter of economy. Good practice at present seems to dictate that the depth should be at least 30 ft.

"Foundations should extend below the frost line. If the earth inside the foundation wall is excavated to this depth and the floor placed on a level with the footings, a very cheap addition to the silo is secured without increasing the height of the silo above the ground. Beyond a certain depth the difficulty in removing the silage is so great as to more than balance the economy of securing additional space in this way.



Hundreds of These Burned Clay Silos Have Been Built in Minnesota.

The Perfect Silo—
What It Must Be

Below are given the reasons why the burned clay silo is the "Perfect" silo and why wood and concrete are failures:

FROST RESISTANCE—The large quantity of water in silage prohibits any form of construction that will not keep out frost, and this point must be taken particularly into consideration in Northern states where the winters are severe. In wooden silos loss from frost is greater than in any other form of construction. Concrete is almost as bad.

IMPERVIOUSNESS—An excess of moisture in the silage means loss. The walls of the silo should resist moisture and there is no other known material that does this so well as burned clay.

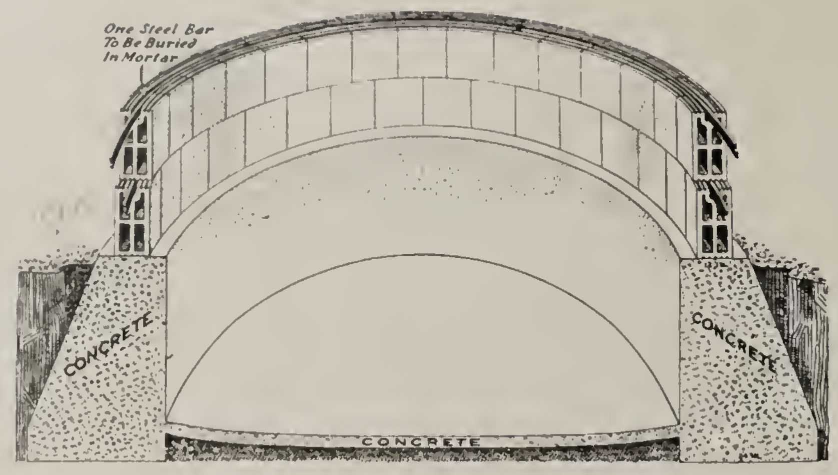
FIREPROOFNESS—This quality is necessary in all building construction and particularly so on the farm where fire protection is at the minimum. The fact that the silo invariably is located close to the barn makes it doubly necessary that the silo be fireproof. Burned clay, of course, is the only real fireproof material.

RIGIDITY—An ideal silo must have rigid walls. It must be strong enough to resist the great pressure of the silage which increases as the silage settles. The friction against the side of the walls and the weight of the walls produce a crushing action which is great near the bottom of the silo. Re-inforced clay tile or vitrified brick construction means greater strength than wood or concrete.

DURABILITY—Silos, like all building construction, should be durable. The severe demands on the silo, however, mean that even greater durability is necessary than in other construction work on the farm. The silo walls must not only resist decay, disintegration and the action of frost, but also any implied or real action of the silage acidity. Burned clay, unlike wood or concrete, is unaffected by any of these conditions.

MAINTENANCE—Repairs and up-keep must be taken into consideration with the silo as well as with the barn or the farm house. A silo that must be adjusted for shrinkage and expansion is impractical. Wooden silos have short lives because of their tendency to disintegrate or decay. After the first few years they must be repaired and this necessity for replacing rotten portions increases as the years grow. Concrete cracks from the action of the frost, being unable to resist the expansion and contraction caused by the sudden changes in the Northern climate. Burned clay is permanent. Once in a wall it never needs repairs, never requires painting and sudden changes in temperature have no effect on it.

COST—This is an item that always is to be considered. Comprehensive statements from farmers who have used clay tile or paving block for silo construction, as well as both wood and concrete, show that burned clay is from $50 to $150 cheaper, the variation in cost being in the difference in cost of material and labor at different points.



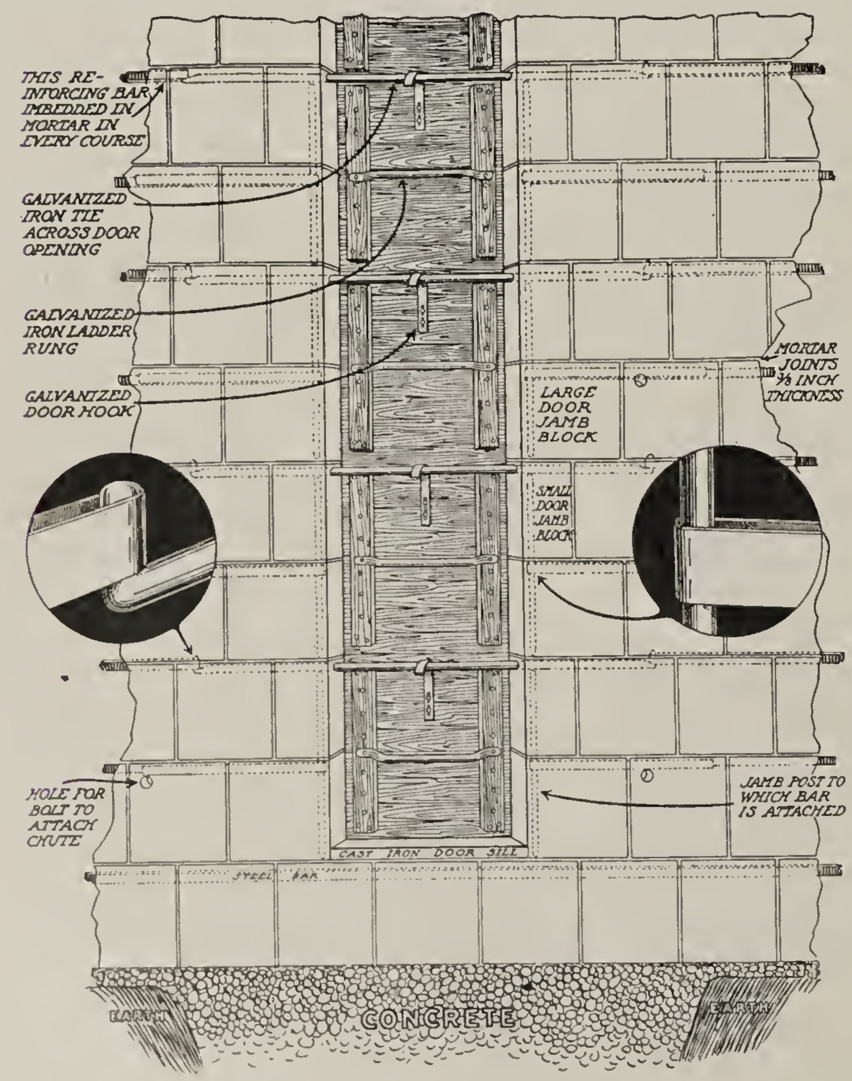
A Good Form of Foundation for a Hollow Block Silo.

Three or four feet up to the first door is not considered objectionable.

"The capacity of a silo varies as the square of the diameter while the wall surface varies directly as the diameter. This means that as far as capacity is concerned the silo should be of as large diameter as possible. But there are other limiting factors involved. When silage is left exposed to the air for a short time, more than a day, it spoils. Enough must be removed daily so that it will keep fresh. In well settled silage the air does not pentrate much over an inch and if 1½ to 2 in. are fed from the surface daily the silage will remain fresh. In warm weather the spoiling will take place much more rapidly than in cold weather, requiring that silage be removed from the surface to a greater depth each day in order to keep it fresh.

"It has been noticed also that air penetrates into loose dry silage farther than it does into that which is moist and compact. Thus, it is seen that under some circumstances an inch might be sufficient, but in order to have fresh silage under all circumstances the silo should be of such size that approximately two inches will be fed from the surface each day.

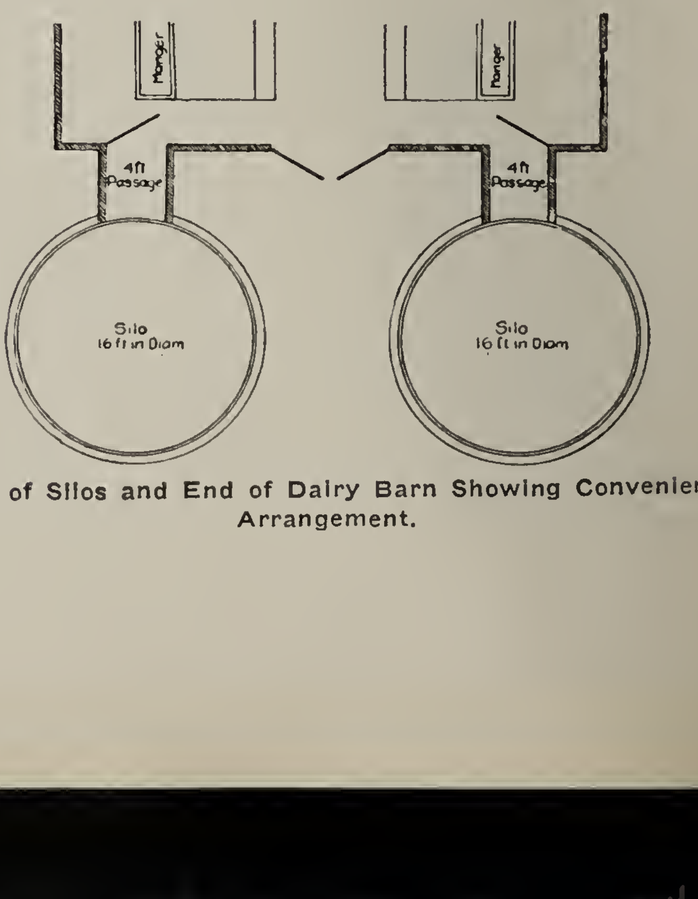
"After silage has been placed in the silo there is more or less settling, the amount of which will depend on the condition of the silage and the amount of tramping it is given when the silo is filled. Under average conditions, the settling will amount to about one-sixth or one-fifth of the total depth. Where one silo is used, it should be of such a depth to provide silage for the feeding season by removing the necessary amount each day. Thus if the silo has thirty feet of silage in it after settling, it will provide silage for 180 days, or six months, by removing two inches from the surface each day."


THIS RE-INFORCING BAR IMBEDDED IN MORTAR IN EVERY COURSE
GALVANIZED IRON TIE ACROSS DOOR OPENING
GALVANIZED IRON LADDER RUNG
GALVANIZED DOOR HOOK
MORTAR JOINTS ⅜ INCH THICKNESS
LARGE DOOR JAMB BLOCK
SMALL DOOR JAMB BLOCK
HOLE FOR BOLT TO ATTACH CHUTE
JAMB POST TO WHICH BAR IS ATTACHED
CAST IRON DOOR SILL
STEEL BAR
EARTH
CONCRETE
EARTH

A Detail of One Form of Construction at the Door.

The following table gives the diameter, height and capacity of the silo and number of cattle that can be fed from the various sizes:

SIZES			No. of Cattle that Can be fed 40 lbs. per day for 200 days
Inside Diameter	Height	Cap'y in tons	
10 ft	24 ft	37	9
10 ft	26 ft	40	10
10 ft	28 ft	44	11
10 ft	30 ft	47	11
10 ft	32 ft	50	12
10 ft	34 ft	55	13
10 ft	36 ft	59	14
10 ft	38 ft	63	15
10 ft	40 ft	68	17
12 ft	24 ft	54	13
12 ft	26 ft	58	14
12 ft	28 ft	63	15
12 ft	30 ft	68	17
12 ft	32 ft	73	18
12 ft	34 ft	78	19
12 ft	36 ft	85	21
12 ft	38 ft	91	22
12 ft	40 ft	98	24
14 ft	24 ft	73	18
14 ft	26 ft	80	20
14 ft	28 ft	86	21
14 ft	30 ft	92	23
14 ft	32 ft	99	24
14 ft	34 ft	107	26
14 ft	36 ft	115	28
14 ft	38 ft	124	31
14 ft	40 ft	134	33
14 ft	42 ft	143	35
14 ft	44 ft	150	37
16 ft	24 ft	96	24
16 ft	26 ft	104	26
16 ft	28 ft	112	28
16 ft	30 ft	120	30
16 ft	32 ft	128	32
16 ft	34 ft	139	34
16 ft	36 ft	150	37
16 ft	38 ft	162	40
16 ft	40 ft	175	43
16 ft	42 ft	187	46
16 ft	44 ft	196	49
16 ft	46 ft	205	51
16 ft	48 ft	214	53
16 ft	50 ft	223	55
18 ft	30 ft	152	38
18 ft	32 ft	162	40
18 ft	34 ft	176	44
18 ft	36 ft	190	47
18 ft	38 ft	205	51
18 ft	40 ft	221	55
18 ft	42 ft	237	59
18 ft	44 ft	248	62
18 ft	46 ft	259	64
18 ft	48 ft	270	67
18 ft	50 ft	281	70
20 ft	30 ft	188	47
20 ft	32 ft	200	50
20 ft	34 ft	218	54
20 ft	36 ft	235	58
20 ft	38 ft	254	63
20 ft	40 ft	273	68
20 ft	42 ft	293	73
20 ft	44 ft	309	77
20 ft	46 ft	320	80
20 ft	48 ft	334	83
20 ft	50 ft	348	87
22 ft	32 ft	243	60
22 ft	34 ft	263	65
22 ft	36 ft	285	71
22 ft	38 ft	307	76
22 ft	40 ft	330	82
22 ft	42 ft	354	88
22 ft	44 ft	371	92
22 ft	46 ft	388	97
22 ft	48 ft	405	101
22 ft	50 ft	422	105
24 ft	32 ft	290	72
24 ft	36 ft	339	84
24 ft	40 ft	393	98
24 ft	44 ft	417	104
24 ft	48 ft	482	120
24 ft	50 ft	502	125
27 ft	36 ft	427	106
27 ft	40 ft	497	124
27 ft	44 ft	559	139
27 ft	48 ft	610	152
27 ft	50 ft	635	158
30 ft	32 ft	452	113
30 ft	36 ft	530	132
30 ft	40 ft	614	153
30 ft	44 ft	690	172
30 ft	48 ft	753	188
30 ft	50 ft	784	196
36 ft	36 ft	762	190
36 ft	40 ft	884	221
36 ft	44 ft	994	248
36 ft	48 ft	1085	271
36 ft	50 ft	1130	282



Plan of Silos and End of Dairy Barn Showing Convenient Arrangement.

LOCATION OF THE SILO—

The location of the silo is of great importance as convenience, time and labor-saving must be considered. As a rule silos are located outside of the barn and there is an excellent reason for this. The burned clay silo, with its reinforcement, of course, does not require the protection that the wooden stave or other materials do, for there is no danger of frost or storm.

The chief reason, however, is one of space economy. There being no danger from weather exposure when burned clay is used, why occupy space in the barn that can be used advantageously for some other purpose?

The inside silo also has the disadvantage of being inconvenient to fill, in comparison with the outside silo, which can be connected by passages to the barn.

HOW TO BUILD THE FOUNDATION—

This is another essential primary step, for much depends on the foundation. Quoting again, from the Iowa State Bulletin, which we do freely in the succeeding pages, we are told that the foundation "must be sufficiently broad to prevent appreciable settling, and deep enough to rest upon soil which is never disturbed by frost."

After locating the center of the silo, the circle for the excavation may be laid out to good advantage by the device shown in Fig. 7, says the Iowa Bulletin. By using a carpenter's level on the sweep and a sliding block for making the circle on the surface, the difficulties encountered on sloping ground may be overcome. Some of the preliminary excavation may be accomplished by team and scraper.

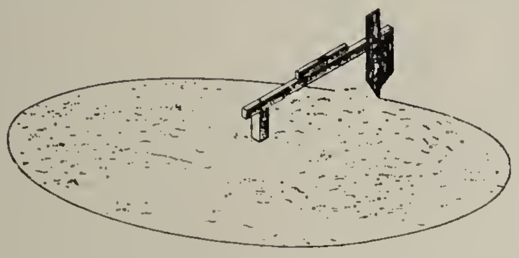


Fig. 7—Laying Out Circle for Excavation.

In case there is a probability of ground water standing about the foundation, there should be a tile drain placed as shown in the drawing below, Fig. 8. Porous back filling placed outside the foundation insures that any surface or ground water will sink to the drain rather than fill the blocks of the wall through any crevice which may exist.

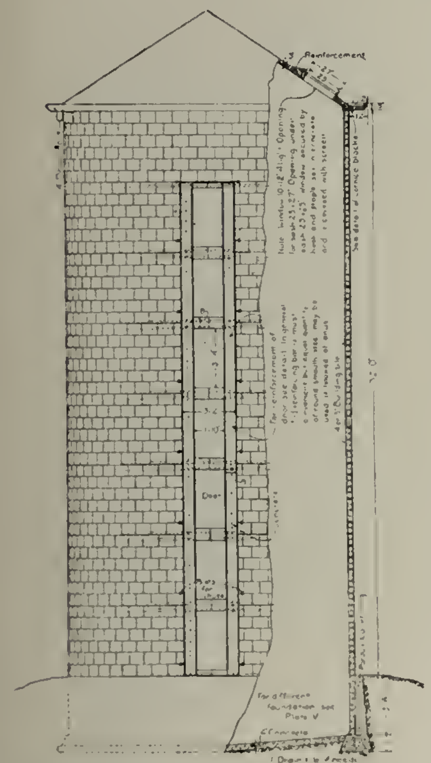


Fig. 8—Showing Location of Tile Drain.

In one type of foundation the first course of the footing is 16 inches wide, made of two eight-inch blocks laid flatwise side by side. Then the next course, 12 inches in width, should consist of blocks laid flat crosswise and bedded in mortar. This completes the footing and the third course becomes the first course of the wall.

The third and each succeeding course should be liberally mortared or plastered at the outside of the vertical joint. This reduces the liability of water getting into any course of the foundation. The lower course, if connected to a drain, would render any other drainage unnecessary.

Another type of foundation is shown in Fig. 8. This form of foundation simply consists of a concrete footing which is placed in a trench at the bottom of the pit, 12 inches or one spade deep, 8 inches or one spade wide at the top, flared to 16 inches in width at the bottom. On the top of this footing is placed the wall built of blocks.

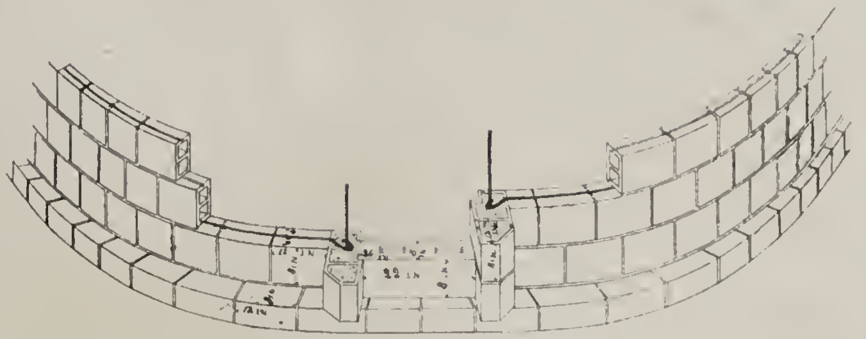


Fig. 9—Showing Foundation Jamb and Door Block in Proper Place.

These two types of foundation are often advisable because a form is not required for building them. Choice would depend entirely upon their relative cost. In communities where sand and gravel are expensive, the first would be cheaper.

Still another type of foundation is shown on page 784. It is built with a concrete footing upon which blocks are placed on end, each course being filled with concrete as it is placed and another course placed and filled in a similar manner. This method is continued to a point at least a foot above the grade line. From this point up, the blocks are laid horizontally. The advantage of this type is that the possible danger from water is obviated. More expense and work is incurred, although no material for forms is necessary.

THE FLOOR OF THE SILO—

Under certain conditions, the silo floor may be dispensed with without interfering with the preservation of the silage. Where the silo rests upon dry clay or any nonporous soil, and where the foundation is deep enough to prevent undermining by rats, the floor may be omitted. Usually, however, a floor is desirable. The portion of the silo below the ground may be made more nearly water tight, the floor may be thoroughly cleaned, and there is no mixing of earth with the silage. A silo floor need not be thick or expensive, as the weight of the silage, though very great, is evenly distributed over the surface and would be just as firmly supported if the floor was not used. A concrete floor of the usual sidewalk construction, three to four inches in thickness, will be very satisfactory. If properly graded sand and gravel can be obtained, one part of cement to five parts of sand and gravel will be about the right proportion to use. The concrete should be thoroughly tamped and troweled.

In some cases where sand and gravel are expensive, it may be cheaper to use a clay sidewalk block or even a hollow block, the same as used in the wall, covered with a thin coat of plaster. In the case of the sidewalk blocks, the plaster covering would be unnecessary if the blocks were laid in cement. The floor should be slightly hollowed in the center as a matter of economy and convenience.

THE SILO WALL—

The first consideration in the wall is the selection of the materials. As noted elsewhere this may consist of any one of three forms of burned clay. We give attention, first, to the hollow tile block.

The mortar used for this work is composed of cement, lime, and sand. The sand should be medium fine. A certain amount of lime is necessary as cement mortar is not plastic enough to stick to the ends of the blocks when applied. No more lime should be used than necessary to make the mortar workable.

The quantity of lime for this purpose will vary somewhat with the material and workman. Perhaps the least amount of lime which could be made to serve the purpose is one part of cement, 1-3 of one part of lime, and two parts of sand, while one part of cement, one part of lime, and four parts of sand is as much lime as would ever be required and at the same time provides a mortar of good quality. The hydrated lime generally sold in paper sacks is a very convenient form of lime to use as it can be mixed dry with the cement and sand. Enough may be mixed dry to last one-half day, then wet down as it is needed. The importance of measuring all materials and thoroughly mixing them cannot be emphasized too strongly. Thorough mixing is absolutely essential for a smooth mortar. Very few men can make a uniform quality of mortar without measuring the materials.

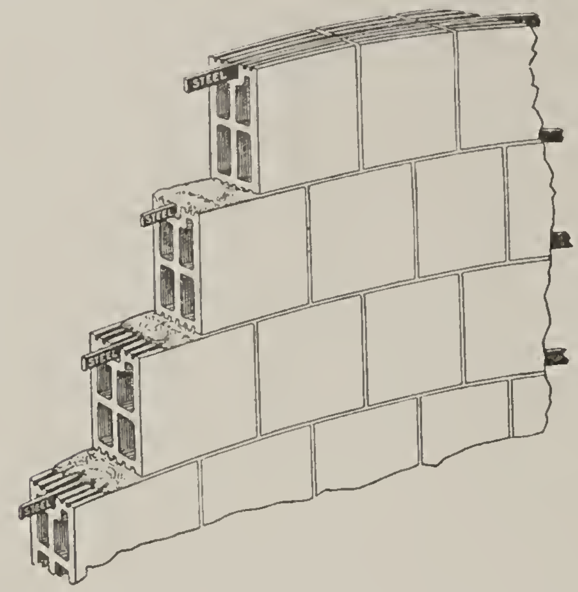


Fig. 10—Showing Method of Re-Enforcement.

In order that cement mortar may set properly, it must contain considerable water. If this water is drawn out by coming in contact with hot, dry blocks, the mortar cannot harden properly. A hard block will of course absorb less moisture than a soft one, but both hard and soft blocks, if warm, should be dipped for a few moments just before laying.

The most convenient and advantageous place for the reinforcement in this type of a silo is in the mortar joints. The size of steel necessary is less than the thickness of the mortar joint; therefore, it does not interfere with the laying of the blocks and, by placing it in the mortar joint, it is thoroughly protected from rust.

The size of the wire most convenient to use is No. 3, which is ¼ inch in diameter. This is as large as can be handled in the mortar joints conveniently, but it is not larger than necessary. Even with this size of wire it is necessary in the case of large silos, and 8-inch blocks, to place more than one wire in each mortar joint near the bottom. However, if convenient to purchase, it will sometimes be advantageous to purchase No. 6, 8 and 9 wire for the upper portion of the sil where less reinforcement is necessary.

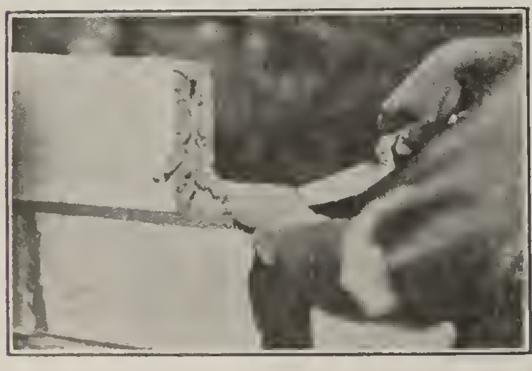


Fig. 11—A Well Mortared Block.

The wire, when embedded in the mortar, will not rust, therefore, black wire should be used as it is cheaper than galvanized. All wire should be stored in the dry where it will not rust. The most desirable quality is hard or high carbon wire. Soft or medium wire is difficult to straighten and kinks badly in handling, thus causing considerable trouble. Hard or high carbon wire is as cheap as any, more convenient, and stronger. These heavy wires are wound in coils, therefore it becomes a very important problem to straighten them sufficiently to lay on the wall.

The most convenient method tried for straightening this wire may be described as follows: Secure or build a reel from which a coil of wire may be conveniently unwound. Mount this reel upon a plank or platform where it will turn easily, then secure a short piece of gas pipe close to the reel.

Through this pipe draw the wire as it uncoils from the reel. The pipe should be so placed that its curvature will be the reverse of the curvature of the wire in the coil. At a convenient distance from the pipe, drive a stake, at which point the wires may be cut to their proper length. In order to determine this length easily, another stake may be driven to which the end of the wire may be pulled each time before cutting. As soon as the first wire is cut, it should be laid upon the wall or fitted to a similar sized circle to see if the curvature is correct. If not, the curvature of the pipe may be altered and, by a few trials, the proper curvature secured.

The horizontal or bed joints should be thoroughly bedded to cover the steel reinforcement. The vertical joints at the block end should be made with extreme care in order to insure perfect air and water tight joints. In order to do this the ends of both blocks should be mortared before pressing together. A well mortared block end is shown in Fig. 11.

The outside joints should, for the sake of appearance, be struck neatly with the trowel as the work progresses, and for warmth they should of course all be tight. On the inside, however, this is scarcely sufficient as there might still be an occasional opening left between the ends of the blocks, which would permit the air to enter. In order to close all such openings, the motar may be left hanging on the inside or cut roughly, then, while still green, washed with a cement wash before the scaffold is raised or the work left for the night. This wash naturally brings to view any crevices which may exist. These may then be filled with mortar, and this thoroughly seals the inside of the wall. This wash is composed of cement and water mixed to about the consistency of good paint and can be applied with a broom. The wash should be applied vigorously in order to smooth down and fill the irregularities. This operation is shown in Fig. 12.

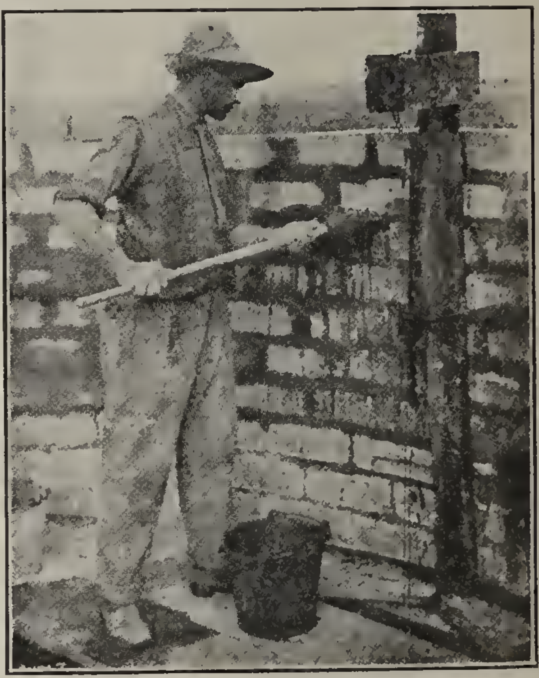


Fig. 12—Finishing the Inside with Cement.

LAYING THE WALL—

The following method may be only one of several practical methods, but it has been followed successfully several times, continues the Iowa Bulletin. The first course should be spaced around ⅛ to 3/16 of an inch apart without mortar in order to determine the proper diameter of silo and length of guide. This will overcome the necessity of cutting blocks. Steel upon the courses below and above the doorways should be long enough to lap past each other and be hooked.

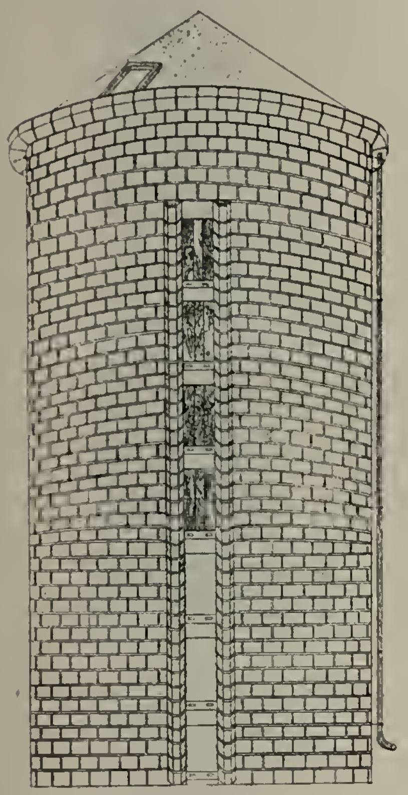


Fig. 13—An Excellent Form of Construction with a Continuous Door.

In laying any straight masonry wall, a line may be used as a guide for securing a proper shaped wall. In the case of a circular wall this is manifestly impossible. Here the need of some sort of a guide is even greater than is the case with a straight wall as the eye of a mechanic cannot be trusted to determine a curve as he would a straight line.

In the silo it is essentially important, for the sake of appearance, preservation of the silage, and strength of the wall, that it shall be circular and plumb. It is highly desirable that a guide shall be simple, easily used, and in the way as little as possible when not in use. It is of course possible to build a wall circular by starting the circle, then using the plumb at intervals on the wall, however, a guide devised has been found better for this purpose by men who have tried both ways. It is also advantageous since, by means of it, the owner of the silo may in a very few moments detect any faulty shape of wall. It is merely necessary to determine the proper position of the scaffold by means of the plumb-bob, then follow the end of guide around wall. All blocks should be within less than a half or three-fourths of one inch of guide and even these variations should be gradual so as not to form shoulders in wall.

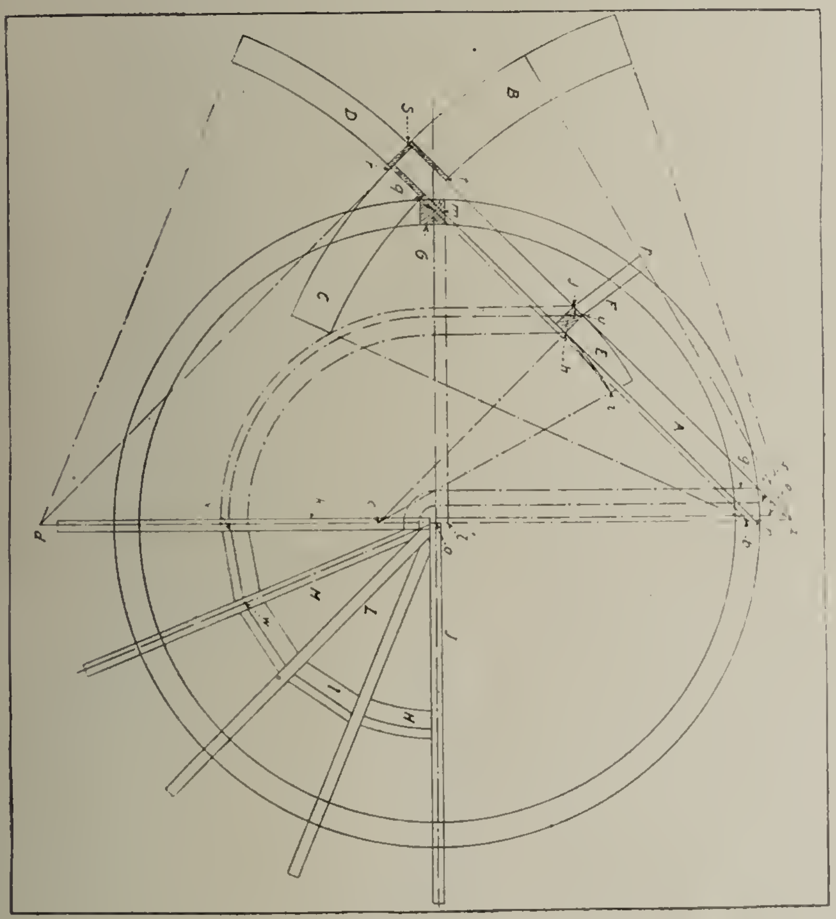


Fig. 14—Roofing Plan for Round Silo.

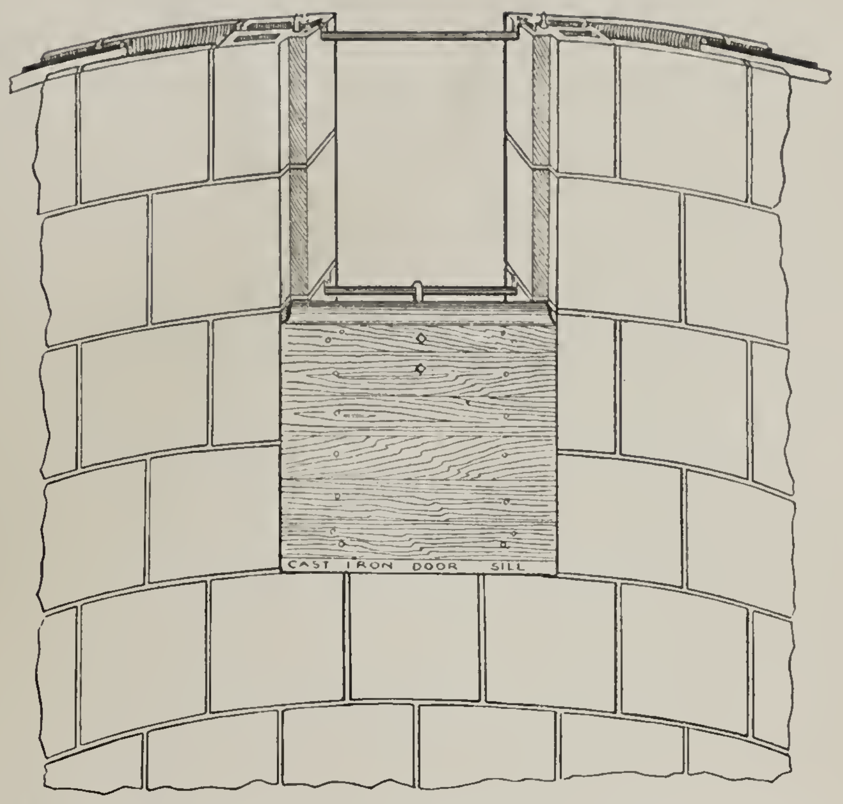


Fig. 15—Shows How Doors Fit in the Jambs, Looking Out from Inside.

THE DOORS—STYLES TO USE.

Two types of doors are suggested for the burned clay silo—one the individual doorway and the other a continuous door. Whichever style is used, it must be borne in mind that airtight joints should be obtained, otherwise there will be leakage and a loss of ensilage from one to five cubic feet at a door.

Sealing with clay has been found to be satisfactory where reasonable care is exercised in its use. This becomes a very simple matter by taking a quantity of fine clay, wetting it until sticky, but quite stiff, aid filling the shoulder of the door frame with this before pressing the door into place. If the mud is rather stiff it will hold the door to place until the ensilage is up high enough to secure it permanently. The moisture of the ensilage keeps the clay damp on the inside, thus making it airtight. This is one of the oldest and best methods of sealing doors. It has been thoroughly tried and found to be very satisfactory.

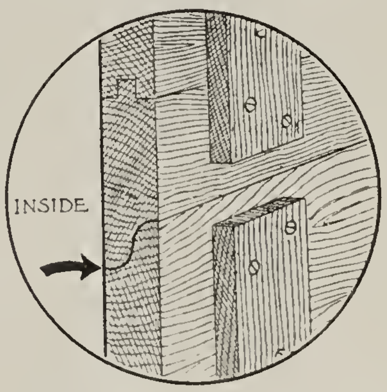


Fig. 16—When the Doors Come Together.

THE ROOF—ITS ADVANTAGES.

Perhaps the greatest advantage of a roof is the lessened liability of the ensilage freezing. Not only is it impossible to prevent freezing in severe weather, unless the silo is provided with a roof, but during snowy or rainy weather the ensilage is mixed with snow or wet down with rain. Furthermore, a silo without a roof becomes a catching place for husks, dust or anything carried in the wind and a favorite feeding ground for the neighborhood pigeons and birds.

Although many silos are not provided with roofs and the live stock eagerly eat the ensilage from them, it is evident that a roof would not only reduce the amount of frozen ensilage, actually save ensilage and preserve its quality, but be worth its cost in making a more pleasant place to feed from in bad weather.

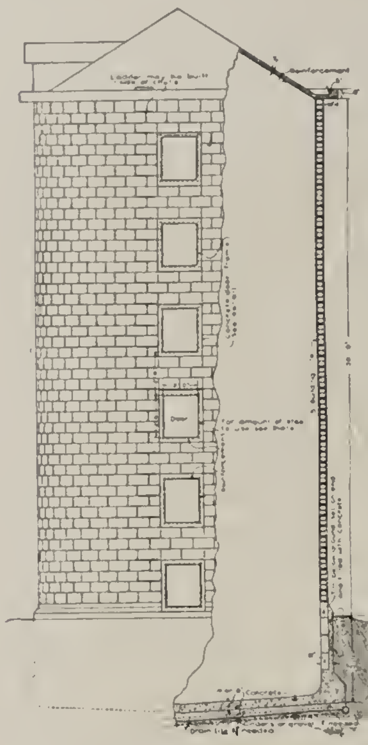


Fig. 17—Elevation and Section Showing Individual Doors.

The roof is also valuable in adding to the silo's appearance. A door for filling, large enough to admit the carrier or elevator from the ensilage cutter, should be placed in the roof. Some light should be admitted to the silo, for if not, it will be necessary to use a lantern when removing the ensilage.

It is advisable to have all portions of a building as near equally durable as possible, therefore, concrete roofs have been built on several, and a convenient method of construction has been developed for the same. In case a wooden roof or any other kind of a roof is desired, a plate made up of two thicknesses of 1-in. lumber sawed to the proper curvature may be bolted down to the upper course of blocks.

NEW ENGINEERING FIRM IS FORMED.

J. C. Schaffer and Others Organize Strong Company to Design and Build New Plants.

The Schaffer Engineering & Equipment Co. has been organized and incorporated under the state laws of Ohio for the purpose of carrying on a general engineering business, and for the purpose of developing and commercializing several new and progressive patented systems and appliances. The directors are J. C. Schaffer, Roman Havlicek, Heath K. Cole, Adelbert R. Keller and Archie E. Best. The headquarters of the company are located at Tiffin, Ohio, in which city are located its extensive offices, and where there are facilities for producing standard and special equipment.

The engineering staff of the company is composed of high grade engineers, men who are collectively familiar with many lines of industrial engineering, and who understand the handling of materials both in the raw state and in process of manufacture. Individually they have proven themselves experts in economical mill and factory design in brick and clay products manufacture, elevating and conveying, silica plants, sand and gravel plants, handling machinery and power plants, along the most efficient labor-reducing lines. They are also specialists in crushing, washing and drying of materials.

These engineers are able to design any special device or system to meet the most uncommon and exacting conditions, and their specialty will be the remodeling and rearranging such clay plants as are not making the expected returns of the investment, because of incorrect engineering and equipment.

The policy of the company is to give the manufacturers of materials a simple, durable, labor-saving and profit-producing plant, as nearly automatic in the handling of the materials and wares as it is possible to make it.'

The company controls the Schaffer patents on a new semi-continuous kiln system, a continuous clay products dryer along new and progressive lines, an automatic feeder which weighs, regulates and distributes materials in proper proportions during transit, and also several other devices for the economical washing, screening and drying of materials.

JOHN C. SCHAFFER, President and General Manager Schaffer Engineering Company.

J. C. Schaffer, the president and general manager of the company, has made for himself a record in the design, construction and operation of manufacturing plants and equipment. Although he is a very progressive engineer, he is conservative in his judgment in new problems, and views his work from many angles before determining upon a course of action.

Mr. Schaffer is the inventor of many appliances which are in general use today.

Roman Havlicek, who is secretary of the company, has a wide reputation in general building design and construction, and engineering, and is an expert in design of automatic and special machinery and electrical equipment.

Adelbert R. Keller is an attorney, and the treasurer; Heath K. Cole, a retired lawyer and the vice-president, and Archie Best, a dealer in building materials, all of Tiffin, Ohio, are all prominent in business and professional circles of their home city and of Northern Ohio, and are well known for their good judgment and progressive business methods.

The company will handle industrial propositions in all the various details, including inspection of properties, analyzing of raw materials, designing of factories and equipment along correct and labor-reducing lines, the supervision of construction, the organization of working forces in the factories, and the designing of all special devices, machinery and equipment to meet the many varied conditions in the industrial world.

Edward J. Glackin, superintendent of special assessments, city of Chicago, in the Chicago "Tribune" of Sept. 28, is quoted as saying: "Brick is one of the most durable pavements in use in this city."

Offers Burning System That Cuts Time and Cost at Kiln

What It Did in a Detroit Plant:

It burned the kiln in four days instead of six days.

It burned brick at a cost of 60 cents per thousand, with coal at $2.30 per ton, when common brick cost $1.90 under regular conditions.

It makes possible a hard-burned face brick from a clay which everyone said was hopeless.

JOHN T. UNDERWOOD.
Inventor of New Burning System.

The evolution of any industry is marked by steps. This is true, likewise of the clay product industry. The particular step that appears to interest the clayworker, the engineer and the inventor just now, seems to be the solution of the burning problem.

Every once in a while we hear of someone who has brought forth an improvement. Some of these are improvements. A great many are not. But out of the whole the industry has been benefited, and today we are burning a better product, and in a more economical way, than we were last year or ten years ago.

Now comes one Underwood who proposes to revolutionize the present-day methods by an entirely new system. His claims are broad—covering as they do, a shortened burning period, a lower consumption of fuel, a better and more uniform product, a reduction in labor and operating expense and such wonderful flexibility that the system can be adapted to up and down draft kilns as well as to steam boilers.

These claims cover practically every point the clayworker has demanded for the ideal system and, if true, indeed will mark a revolutionary step in the clay product industry.

"Brick and Clay Record" has made an exhaustive investigation into Mr. Underwood's claims within the past few weeks. The result of this investigation, which was prosecuted with the most complete thoroughness, is given in this article by Mr. Walker.

By Irwin Charles Walker

A Staff Correspondent

ANY system that will cut the burning period in a kiln to a noticeable extent, that will burn building brick at a cost of 60 cents per thousand, that will produce a uniform color and a perfect product—any system that will do these things for the clay product industry may be safely classed as a distinct step in the evolution of that industry.

John T. Underwood, brickmaker, claims to have accomplished these things, and to prove his claims are not visionary he produces what looks like indisputable proof.

A gas producer system is the one he uses to bring about the results he tells you about, but it is not an ordinary system, for it is something different and in that difference is where lies the secret of his proposition.

Construction of Producer Bottom and Cone, also Housing Foundation for Air Fan with Air Tunnel Supplying Air to Arches. Lateral Flues Leading from Gas and Air Tunnels are under all Arches.

In Detroit, for instance, it never has been known that a stiff mud face or common brick could be made successfully out of the clay that underlies the territory adjacent. So convinced have Detroiters become of this practically no face brick have been made there and many millions are shipped in from Ohio, Indiana and other states annually.

Mr. Underwood, however, has made not only good stiff mud common brick out of the Detroit clay, but he also has made a most excellent face brick of unusual hardness—a feat that has been declared impossible.

That the new system is practical is proven by Underwood who points to practical tests that have been made under the most severe conditions.

Before taking up the evidence that has been presented to prove Mr. Underwood's claims for his system, I am here appending the points of merit which he has made for it. They follow:

It burns a kiln in from three to four days.

It burns, on an average, about one thousand building brick, at a cost per thousand of about 60 cents or less, where coal is $2.30 per ton.

It uses charcoal, anthracite, coke, lignite, peat or bituminous coal.

It is adaptable to up draft, downdraft, or pottery kilns and for steam boilers and producer gas engines.

It allows the natural color of the clay to be burned in the brick just as successfully as in a continuous tunnel kiln.

It insures absolute control of the admission of the fuel and air supplies, thus permitting either a gentle heat or a fierce heat at will.

It allows the air to be blown in to force the heat to the top of the kiln and at the same time not burn the arches or check them.

It concentrates the fuel handled to one location.

It saves labor for fuel distribution and for removal of ashes.

It saves the use of grate bars and furnace doors.

It eliminates the cleaning of the furnaces after each burn.

It eliminates the necessity of lining the furnace after each burn.

It saves the life of the kiln.

It produces a more uniform burn.

It is an absolute smoke consumer.

These claims are broad ones—they are big ones, and the average clayworker who reads them is going to express a doubt equally as large.

Out in the West end of Detroit there is a brick plant. It is operated by the F. H. Wolf Brick Company, of which Frank H. Wolf is secretary and treasurer. When Mr. Underwood's invention was brought to the attention of the editor of "Brick and Clay Record" the statement was made that the system had been given a practical trial at the Wolf plant.

Naturally there was some question as to the statements made. Accordingly the Wolf Brick Company was asked for verification. This is the letter Mr. Wolf wrote in reply to that letter of inquiry:

Detroit, Michigan.
October 14th, 1913.

Brick & Clay Record,
Chicago, Ill.
Gentlemen:—

Replying to your inquiry of the 13th inst. we are pleased to say that the two experimental kilns, containing approximately 540,000 brick, burned on our yard by the Underwood system of applying producer gas direct to our up-draft scove kilns, was in our estimation a perfect success, all brick burned therein going direct to the job—the new Michigan Central Depot, in this city.

The brick were burned in approximately four days at cost of sixty cents per thousand (coal at $2.30 per ton), as against five to six days at a cost of $1.90 per thousand, using crude oil at 4¾c per gallon, which is regularly employed at our plant.

The installation used was only temporary in its nature, and simply built to demonstrate and prove the principle of successfully applying producer gas to up-draft scove kilns, in view of which fact the results obtained seem all the more remarkable.

We will be pleased to give you any further information you desire, in the event we have not covered the ground thoroughly herein.

Yours very truly,
F. H. WOLF BRICK COMPANY,
Per Frank H. Wolf, Secy. and Treas.

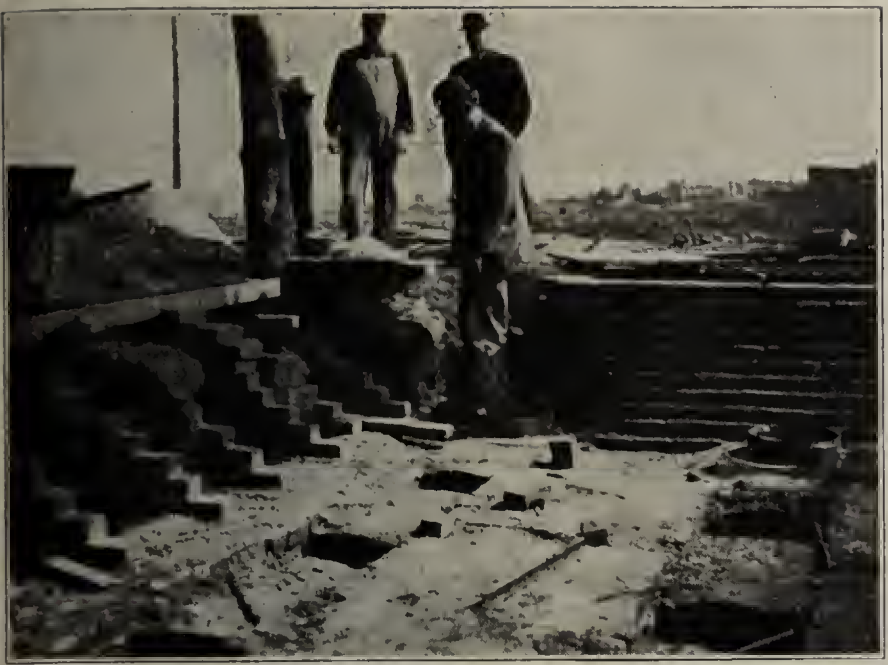
Mr. Wolf says, as you will see by reference to his letter, that two kilns were burned containing "approximately 540,000 brick," the system being applied direct to updraft scove kilns. Further we find that the experiment "Was a success" and that "all brick burned therein went directly to the job, the new Michigan Central Depot."

It took four days to make the burn, as against five or six days under the old system, and the cost was 60 cents per thousand with coal at $2.30 per ton, against $1.90 per thousand, using crude oil at 4¾ cents per gallon—the kind of fuel regularly employed at the plant.

Cutting down the cost from $1.90 cents per thousand brick to 60 cents is a considerable cut.

Following the receipt of this letter from the Wolf Brick Company, I was sent to Detroit to interview Mr. Wolf personally and to see Mr. Underwood, with the idea of thoroughly analyzing the proposition. Mr. Wolf, not only reiterated every statement made in his letter, but also verified all the statements that have been made in connection with the experiments that were conducted.

Samples of the brick made were shown the representative of "Brick and Clay Record" and these bore out every claim made for them by Mr. Underwood and others interested in the system. They were of an extra fine dark red color and were as perfectly burned as any brick could be. I was not there, however, to form hasty conclusions or take snap judgment. Not contented with merely examining the samples that were offered, the Mich-



The Picture at the Left shows the Air, Gas and Supplying Crossing Tunnels. The Former are shown at the Lower Right Hand Corner of this picture, while the Gas Tunnels are at the Lower Left Hand Corner and Run toward the Centre. The Supplying Crossing Tunnels are Shown at the Left. Thimbles will be on all Air and Gas Tunnel Openings and on these are set Mushroom Valves. These valves are very Accurate, and through them both Gas and Air are Perfectly Controlled. The Picture on the Right Shows Main Floor Under Arches with Covers Partly Placed on Row of Tunnels in the Left Foreground. This Picture Also Shows the Air Supply Pipe passing through Gas Tunnel with Sliding Valves Resting on Air Pipe. Regulation is Gained by Sliding These Valves, so that Holes in Top Plate are Closed and also Holes in Air Pipe.

igan Central station, now under course of construction, was visited and the brick used on the job were found to be of the same texture, the same color and of the same hard-burned quality.

Mr. Underwood was next sought. He was affable and submitted himself willingly to the interview proposed. Working drawings of his system were brought forth and carefully explained and analyzed and every opportunity given to arrive at a definite conclusion.

The principal part of Mr. Underwood's system is the burner, of course, and the manner in which the fuel and the air necessary for proper combustion are introduced into it.

Take, for instance, the up-draft kiln such as was used in the Wolf plant. Under each arch there is a tunnel running lengthwise of the arch, and distributed along the length of each tunnel are placed several burners. The producer gas is introduced into these tunnels, under the arch, under pressure and is controlled by valves at each burner in the tunnel and also the several burners of the arch are controlled as a unit by a valve in the tunnel exterior to the kiln. The air necessary for combustion is led into each individual burner through a separate system and is controlled by individual valves exterior to the kiln, and thus the air admitted to each burner is independent of the others in the same arch. The air admitted, or forced, into the kiln is also under pressure.

This system promises absolute control of both gas and air, each independent of the other, and each burner of the several in a single arch is also independent in the amount of the air and gas admitted from the others in the same arch.

This independence allows of great range of manipulation and also of very gradual heating in the case of tender material. For, by admitting a small quantity of gas to only some of the burners in an arch and only enough air for combustion, a very gentle and slow heat can be obtained, so that by lighting only one burner in each end merely a warming fire will be obtained.

On the other hand, by opening all the burners or valves, with the proper air, a stronger fire will result. After the valves have been opened to their fullest extent and the arch is thoroughly hot, this heat can be forced up into the kiln by means of an excess of air above that necessary for combustion, the air being under greater pressure than the gas.

It can be seen, therefore, that the system readily can be adapted to any type of down-draft kiln, since the burner is of such construction or type that it can be introduced into the fire boxes of such kilns and the fire admitted as heretofore, the additional cost being the construction of suitable ducts for leading the gas and air to the firebox.

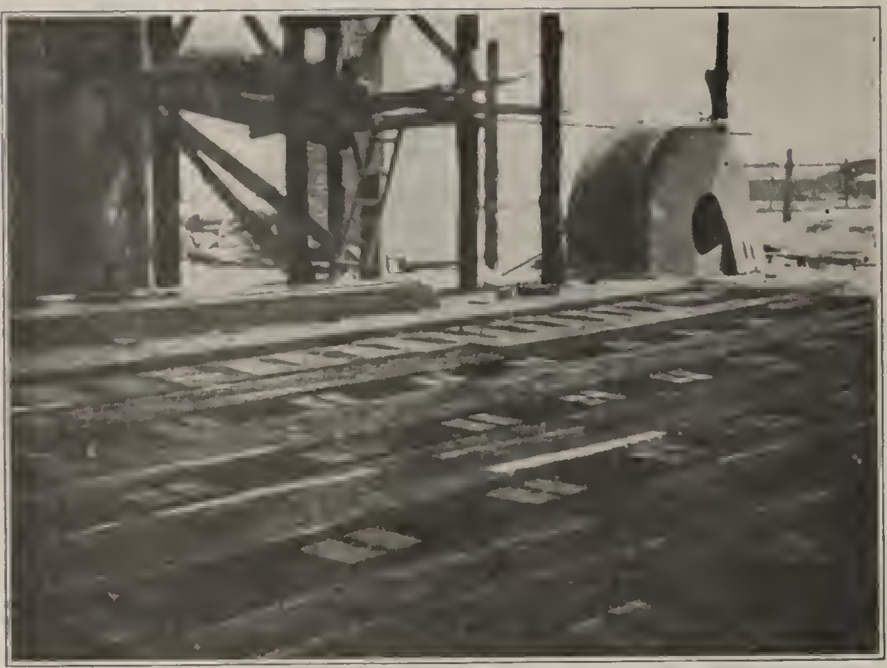
That the Underwood system has interested others than the editor of this journal is shown by the numerous pilgrimages made to Detroit within the last few months. One of these parties recently consisted of S. E. Cullum of the Morehead Engineering Company of Minneapolis, Minn., and formerly with the C. W. Raymond Co., of Dayton, Ohio; Frank Lambert, general superintendent of the Illinois Brick Co., of Chicago, and H. Alsip, also of the same company. The following letter from Mr. Cullum written to Mr. Underwood immediately after his visit to Detroit gives an idea as to the way the Underwood system impressed him:

Mr. John Underwood,
66 Buhl Block,
Detroit, Mich.

My dear Mr. Underwood: I could not overlook the opportunity to travel from Detroit to Chicago in the company of Mr. Lambert and Mr. Alsip, of the Illinois Brick Co., as it afforded me a chance to get close to them and get their views on the result of their inspection. I must say that both of these gentlemen were very much enthused over what they saw. They stated to me that it was the greatest fire they had ever seen in any brick-kiln. You had the gas harnessed and had full control over both gas and air. This of course gave you the opportunity of shooting the fire just as strong as you liked and at the same time hold it under control by the operation of your air. You do not realize yourself, neither does Mr. Davis or Mr. Mallow, the magnitude of this proposition.

Stop and think on this one subject that Mr. Lambert, Mr. Alsip and I discussed on the way to Chicago: Producer gas can now not only be utilized in all kilns but also in producer gas engines as well, thus eliminating all boilers and steam equipment.

The thing that should be done is along the lines we talked of—namely, building a modern plant in Detroit. Equip it with gas engines and utilize pro-



Construction of Kiln Bottom, showing Air Fan and Producer Stack and a portion of Producer, at Left. The Tunnels are Under Each Arch, Valves Being Placed for Covers.

ducer gas in drier and kilns. Thus you would kill two birds with one stone—make a large profit on the brick, and conduct a demonstration plant that would give manufacturers actual, indisputable cost data for every stage of manufacture. This for burning common brick in up-draft kilns.

Later on build a continuous kiln for higher grade brick like the samples you made from local material.

This should be done at the earliest possible moment for time is the most important factor. You should begin to realize the compensations for a lifetime of hard work, and Mr. Davis and Mr. Mallow should get returns on their money at once.

Read this letter over carefully, take it up with Messrs. Davis and Mallow, and all of you give this proposition your serious consideration. The opportunity is here for the greatest financial success ever made from clay.

Just a word of my own private opinion—you have made the most wonderful achievement in the history of the burning of clay.

With best wishes for your health and success, I am,

Yours sincerely,

S. E. Cullum.

Mr. Cullum, apparently, is more enthusiastic over the system than the inventor himself, who discusses what he has done, as complacently as if he had worked out only one of the simple problems of the day's grind around a clay plant.

John J. Maroney, president of the Chicago Brick Manufacturing Company, Chicago, is another enthusiast over Mr. Underwood's new system. In discussing the burner he said:

"I have known Mr. Underwood for years—both as a superintendent of brick plants and as a practical kiln burner, and I know when he says he has made some improvement in burning of clay products he has done so.

"While it is true I have not seen his system in actual operation, I have seen the plans and have had a first-hand description of it and from these and my knowledge of the man and his ability, I believe he has solved the problem that has been before the clayworker ever since man began to show progress. John Underwood would not make such claims as he has made unless he had succeeded."

From out of the ranks have come most of the world's benefactors. Robert Fulton, the inventor of the steamboat, held the lines over the mule that pulled a canal scow. Stephenson, the man that conceived the steam locomotive, was an engineer working for day wages. Bessemer, who converted common pig iron into steel, was an ordinary wage earner. Edison, the wizard of electricity, who gave the world the electric light, the phonograph, the moving picture machine and who made the first real and important improvement in the telegraph, was a country telegraph operator working for $30 per month.

If John T. Underwood makes a commercial success of his system, who knows but what he will take his place among the world's benefactors? He has all the personal attributes, for he is from the ranks, coming as he did from the brickyard, and all he needs to put him there is the acceptance by the clay working world of his producer-gas burning system.

Mr. Underwood has had a world of experience in the clay industry, having been in the practical end of it all his life. He was born in Sheridan, Hamilton County, Ind., May 12, 1860. His father, John Underwood, was a prominent brick manufacturer at that time, and his son started moulding brick at the age of 14 on his father's yard. He continued in this work until the age of 18, when he was ill a year with typhoid fever. Upon his recovery he went to Vincennes, Ind., and moulded brick one year for the Westfeldt Brick Co., and then went to Chippewa Falls, Wis., and started a plant of his own—the Cartwright Brick Co., Mr. Cartwright being his father-in-law.

Mr. Underwood disposed of this plant at the end of two years, and went to Menominee, Wis., with the Minneapolis Red Pressed Brick Co. He was there employed for three years, when he went on the road for W. A. Eudaly, building kilns, which work he followed for six years. He built Eudaly kilns all over the country, building the original one in 1892 on the yard of the Alton Brick Co., Alton, Ill.

Among other places he built large kilns at Ft. Dodge, Ia., Scranton, Pa., Ashville, N. C., Louisville, Ky., building the last one on the plant of the Springfield Paving Brick Co., Springfield, Ill., where he became the superintendent.

Mr. Underwood remained at this plant for 12 years, at the end of which time he started a dry-pressed brick plant in Springfield under the name of the Underwood Brick Co., but conditions being bad at the end of two years he decided to give it up, and went to Mexico where he built and put in operation a dry-pressed plant for state officials at Sonora, which is the capital of Hermosillo.

From Mexico Mr. Underwood went to Terre Haute, Ind., and built a large Youngren kiln on the plant of the American Clay Co. After this was completed and put in operation he joined the selling force of the C. W. Raymond Co., to push the Youngren kiln, and at the end of his third week he had sold for this well-known concern a $50,000 outfit to the Columbus & Hocking Coal & Iron Co., at Kachelmacher, O. (now called Greendale). This outfit included a Youngren kiln, with the understanding that Mr. Underwood would superintend the building of the kiln and installation of the machinery and put the plant in operation. He remained there for two years, and went to Logan, Ohio, to rehabilitate the old Curlin plant in that city for the New York Coal Co. He remained there one year.

During all these years of experience he became more or less of an authority in the matter of kilns and had designed the Underwood producer-gas-fired continuous kiln, and in addition to this, had taken out many other patents, including the Chambers indenting table.

After successfully concluding his work at Logan, he determined to push the Underwood continuous kiln, and through E. E. Coate, of Dayton, O., (now with the Dayton Engineering Co.) whom he met during his connection with the Raymond Company, he was introduced to two Detroit capitalists, C. K. Davis and W. F. Mallow, who became interested in his kiln and patents and furnished him financial support to push them.

Mr. Davis, being not only capitalist, financier and organizer, but of an analytical bent, put it up to Underwood that if producer gas could be used in continuous kilns he did not see any reason why it could not be used in any kiln. This was talked over with Mr. Mallow, and it was decided to furnish Mr. Underwood with ample funds to work out what they all agreed was the hardest proposition—the application of producer gas to an up-draft scove kiln.

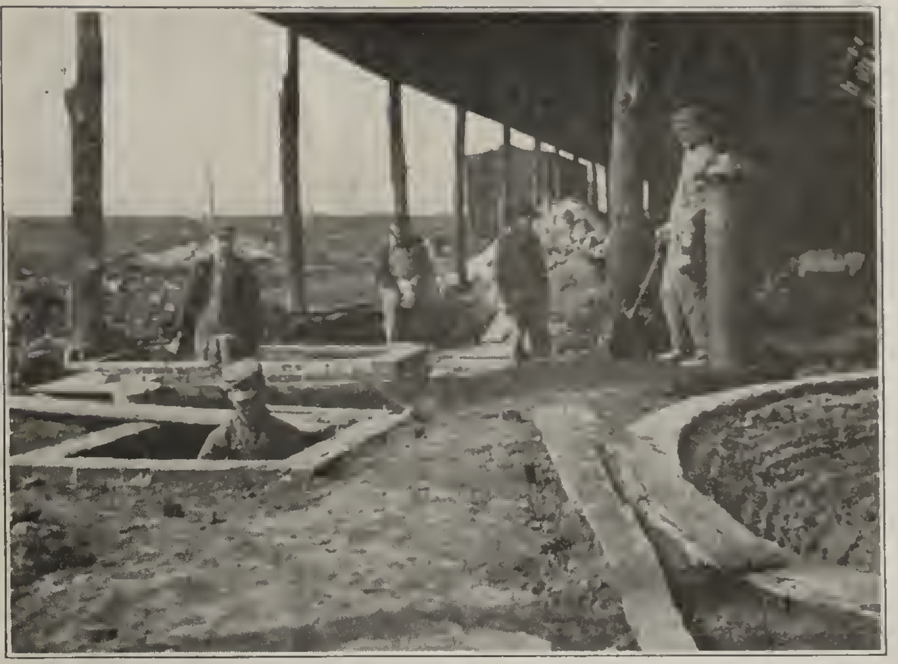
How well Mr. Underwood handled this is thoroughly demonstrated from the story of the experimental burns at Detroit.

Mr. Davis, originally of Wellston, O., is about 45 years old. He has extensive coal mining interests throughout Ohio, owning and operating 10 mines, and also owns the C. K. Davis Mfg. Co. of Detroit, which concern manufactures storage battery haulage locomotives for mining and industrial plants. When Mr. Davis became connected with the mining industry, he did not like the idea of using mules in mines, and as a result of this he organized the Davis Mfg. Co. for the manufacture of storage battery machines. He has made a big success of this proposition. Mr. Davis has other large interests in Detroit.

Mr. Mallow is a well known contractor in Detroit, and is also president of the Gregg Hardware Co., and the Rochester Sand-Lime Brick Co. He has many Detroit structures to his credit, and at the present time is erecting the beautiful Addison Family Hotel in that city, conceded to be one of the most beautiful family hotels in the country.

W. F. CHAPMAN.

W. F. Chapman, who is also interested with Mr. Underwood, was born in Albany, April 17, 1885, and was educated in the public schools of Albany and New York City, graduating from Yale, in 1905. He took a technical and civil engineering course during his four years, preparatory to mining, and then accepted a position with the Tonopah Exploration Co., Tonopah, Nev. From there he went with the Buffalo & Susquehanna Iron Co., Iron River, Mich., and then became connected with Mr. Underwood at the Columbus & Hocking Coal & Iron plant, Kachelmacher, and has been identified with him since that time.



Foundation for Gas Stack and Fan Housing with a Portion of Producer Base at Right.

Mr. Chapman has a keen mechanical mind, and has worked out the mechanical ideas of Mr. Underwood in a masterly way. Much of the success of the Underwood System of applying producer gas, lies in the development of the mechanical application which Mr. Chapman worked out.

Buys Buckeye Clay Plant.

Henry A. Rumsey, of Chicago, has purchased the properties and machinery of the Buckeye Clay & Coal Company, at New Salisbury, Ind. It is not known, as yet, whether this plant will be given further equipment and started up, or if Mr. Rumsey will dispose of the property.

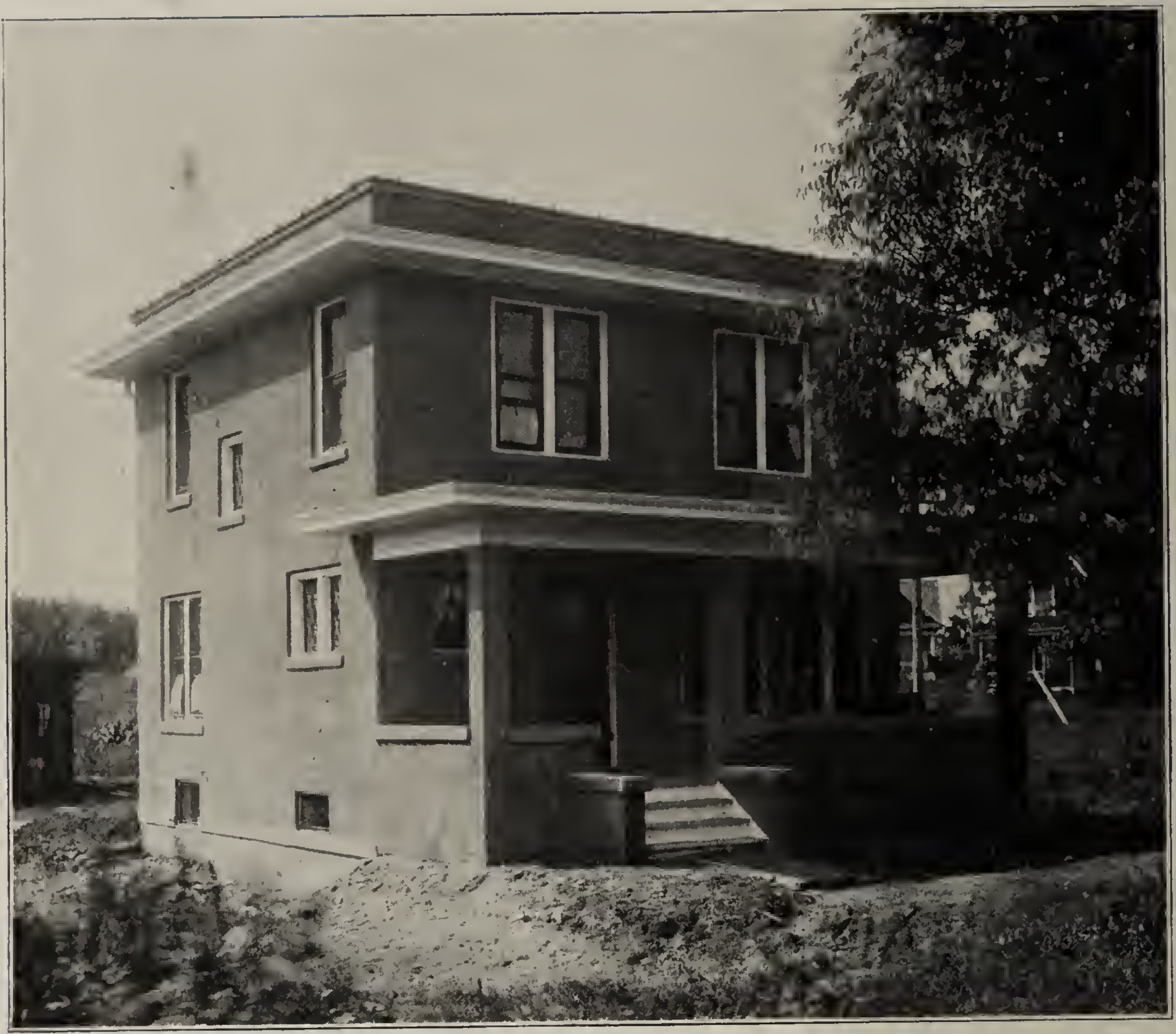
Philadelphia Gets Roads Congress.

Considerable interest is being shown in the fourth American Good Roads Congress that will be held in Philadelphia on December 9th to 12th inclusive. An exposition of road building methods and road building machinery will be held, and it is expected that the paving brick interests of the country will be prominently represented, not only in the personal attendance of many of the leading manufacturers, but in the exhibition of proper methods of street paving with the best of all paving materials—vitrified brick.

Lays Pavement for Demonstration.

A stretch of 1,000 feet of brick pavement, laid on a macadam base, is being put down by the Denny-Renton Clay & Coal Company, beginning at the city limits of Seattle, Wash., on Duwamish Avenue and extending south. The road is being put down for demonstration purposes, it being the first brick pavement laid on this kind of a foundation, ever built west of the Rocky mountains. This company has also furnished the paving brick for a mile of country road, just out of Ellensburg, Wash., in Kittitas county, and for two miles of Permanent Highway No. 5 in Snohomish county.

Here's a Fire-Proof House



This is the House that Walton Built with Steel and Burned Clay.

IT SHOWS WHAT CAN BE DONE WITH STEEL AND HOLLOW TILE IN MODERN HOME BUILDING

In the September 15 issue of this journal it was shown what can and is being done in reinforced steel brick work in the skyscraper. Here is shown what is being done in steel and hollow tile in combination in the construction of a modern price home. This new type of building is less expensive than any other and has the extra advantage of being built for all time and to resist frost and fire.

A SMALL HOUSE that is actually—not theoretically—fireproof, has been built in Minneapolis, Minn., for $2,200. It has seven rooms, the exterior walls are of 8-inch hollow clay tile, with stucco veneer and brick facing. The inside walls are of gypsum tile supported direct by steel and wood beams. These beams are below the floor joists and the interior partitions are brought down through the floors, and rest directly on the beams, making it next to impossible for fire to travel from one room to the other.

The house is attractive in appearance, and was built singly—that is, it was not one of a group. There is no doubt but that the same plan could be followed in a large improvement, where many houses were built at one time, and the cost could be brought down to $2,000 or even a little less. These facts open a wide and fertile field to the speculative builder who would cater to men of moderate means and small incomes, as well as to the large employer of labor who is considering a plan for building homes for his men.

Within easy distances of our great centers of population lie vast, unimproved tracts of land, ripe for the builder. Cheap transportation and cheap land are available, but the constantly increasing cost of lumber, lath and sheathing has made the frame house, even of the most ordinary type, a costly investment. The cost of upkeep and the fire menace has discouraged the building of large groups and the frail nature of these frame houses has militated against rental. The cement-block house and the house with brick veneer—"safe from fire" outside, but loaded with inflammable partitions, have not helped to encourage the building of the "poor man's home."

What Roy L. Sayre, the architect, and Edmund G. Walton, the builder, have done in the way of solving the serious problem of proper housing for men whose incomes are not affected by the income tax, is of tremendous importance, not only to those engaged in the manufacture of fireproofing materials, but to the men who are making a study of civic betterment, for it points a way out from the festering tenement and the resultant misery, disease and crime.

That Cost $2200 to Build

WHAT THIS HOUSE DOES:

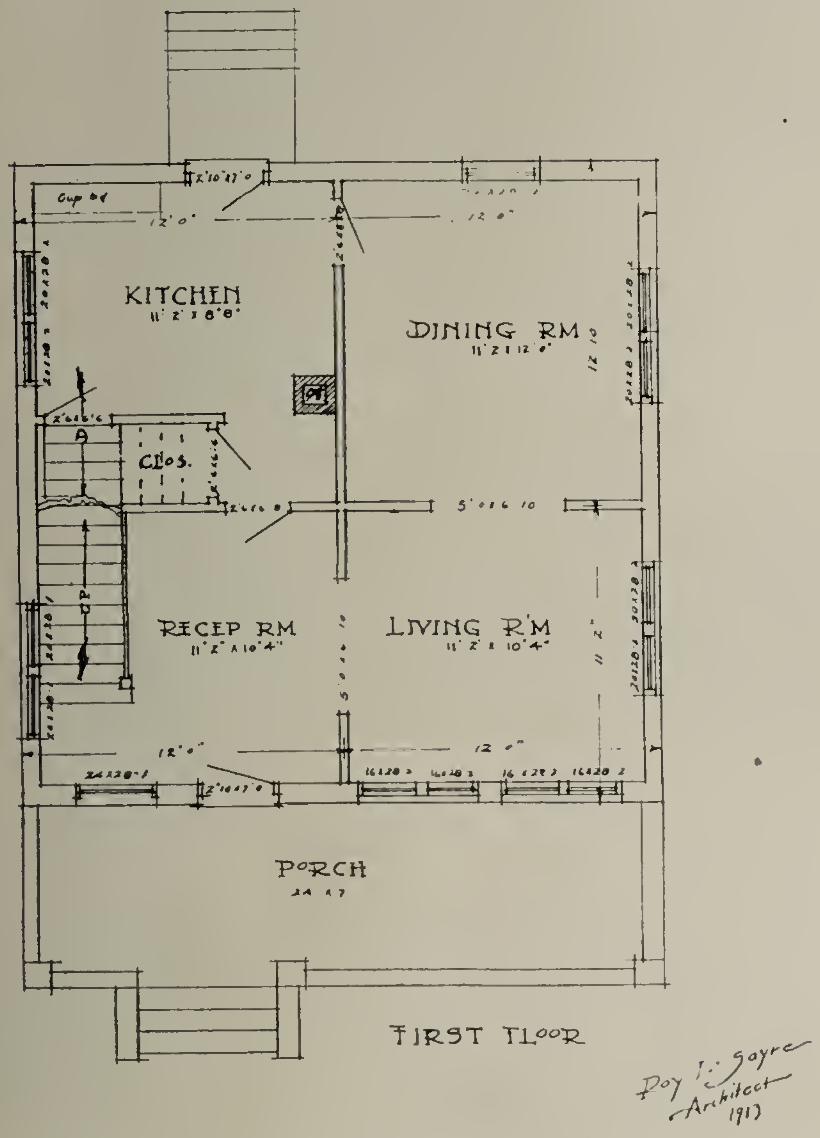
It Solves Low Cost of Construction
It Gives Safety from Fire
It Means Warmth in Winter
It Assures Coolness in Summer

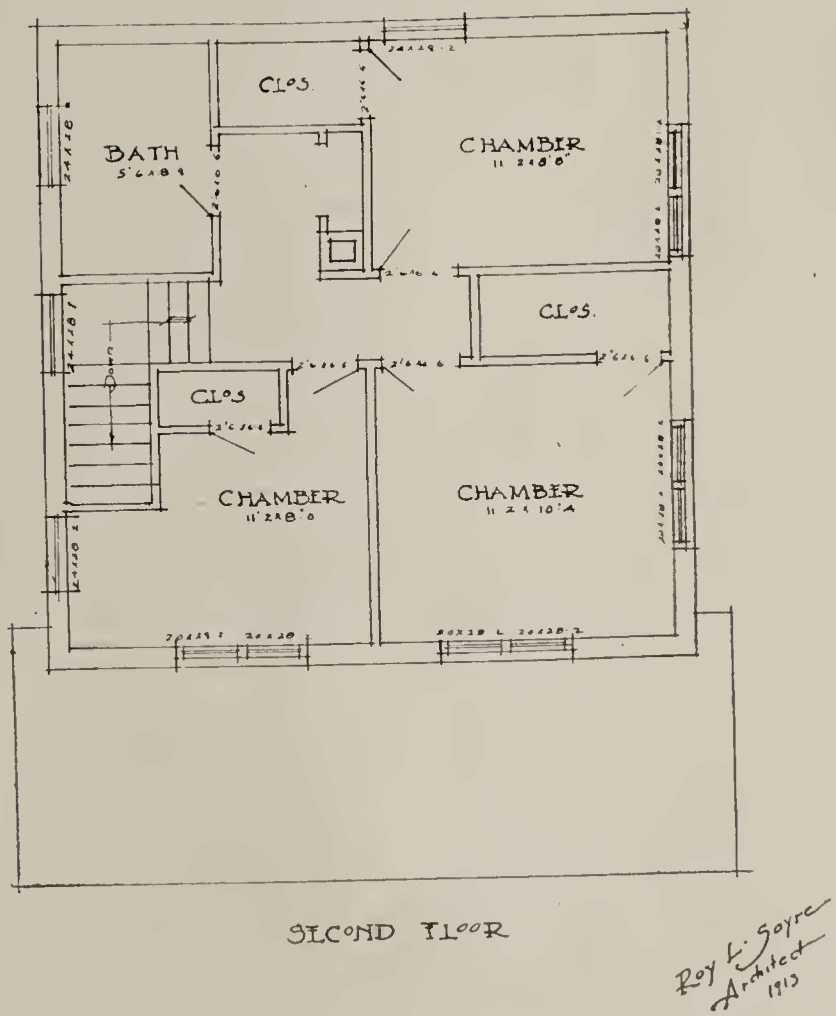
Showing Interior Construction, Partition Walls, Exterior Walls and Steel Structural Work.

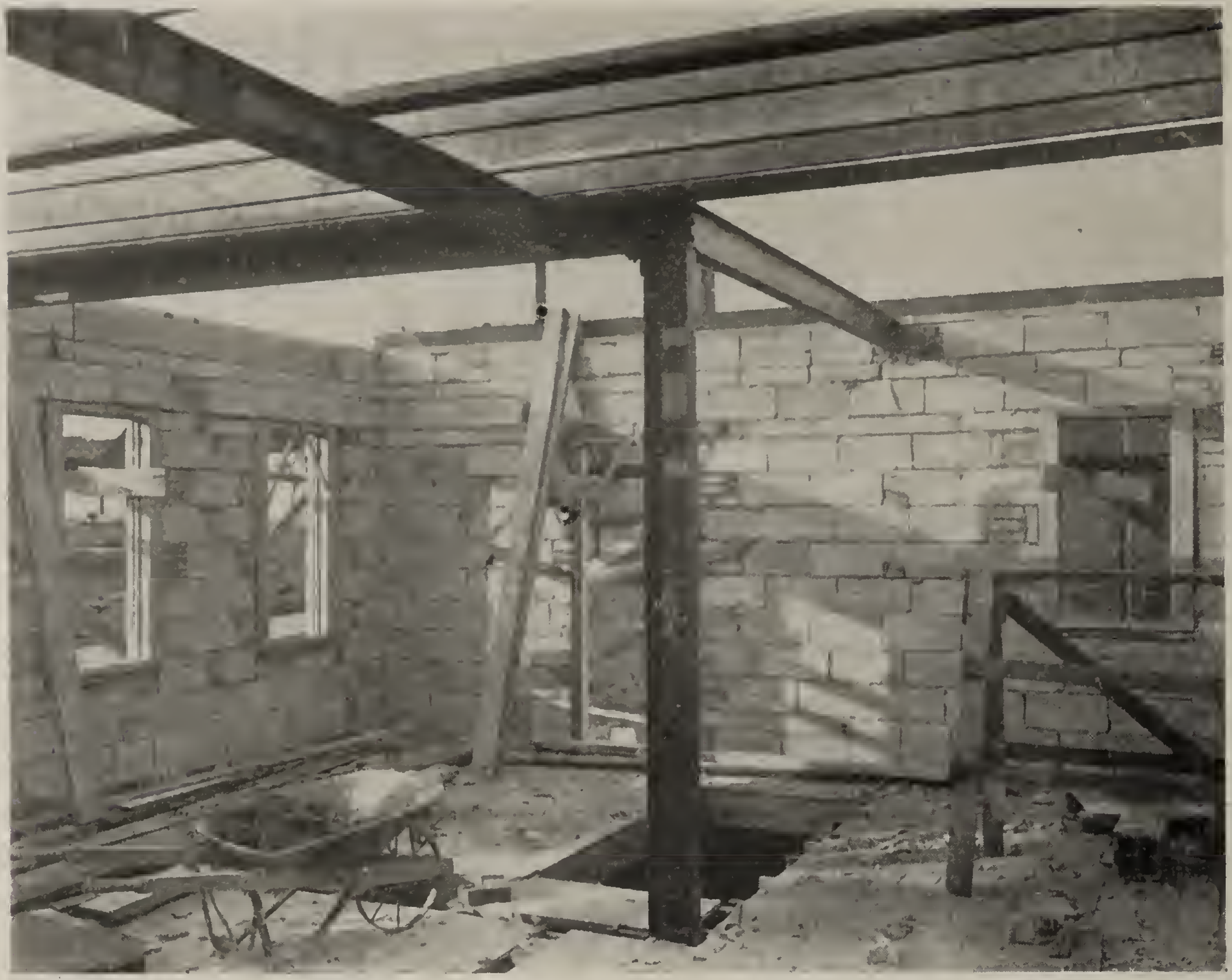
Using materials that had, hitherto, been dedicated to high priced residences—steel, hollow block, pyrobar and stonewood, reducing to an inconsiderable minimum wooden roof and floor beams, and frail lath and plaster partitions, Mr. Sayre made use of the experience he had had on more expensive forms of residence work, making the fireproof principle paramount in his tentative plans. When he discovered that real fireproof construction could be used, he made a design that would attract the eye, a plan that would give a fair size in the rooms, and, when the final nail was driven, and the key turned in the front door lock, found that the amount this fireproof house had cost was within a few dollars of the amount he had figured upon in the beginning.

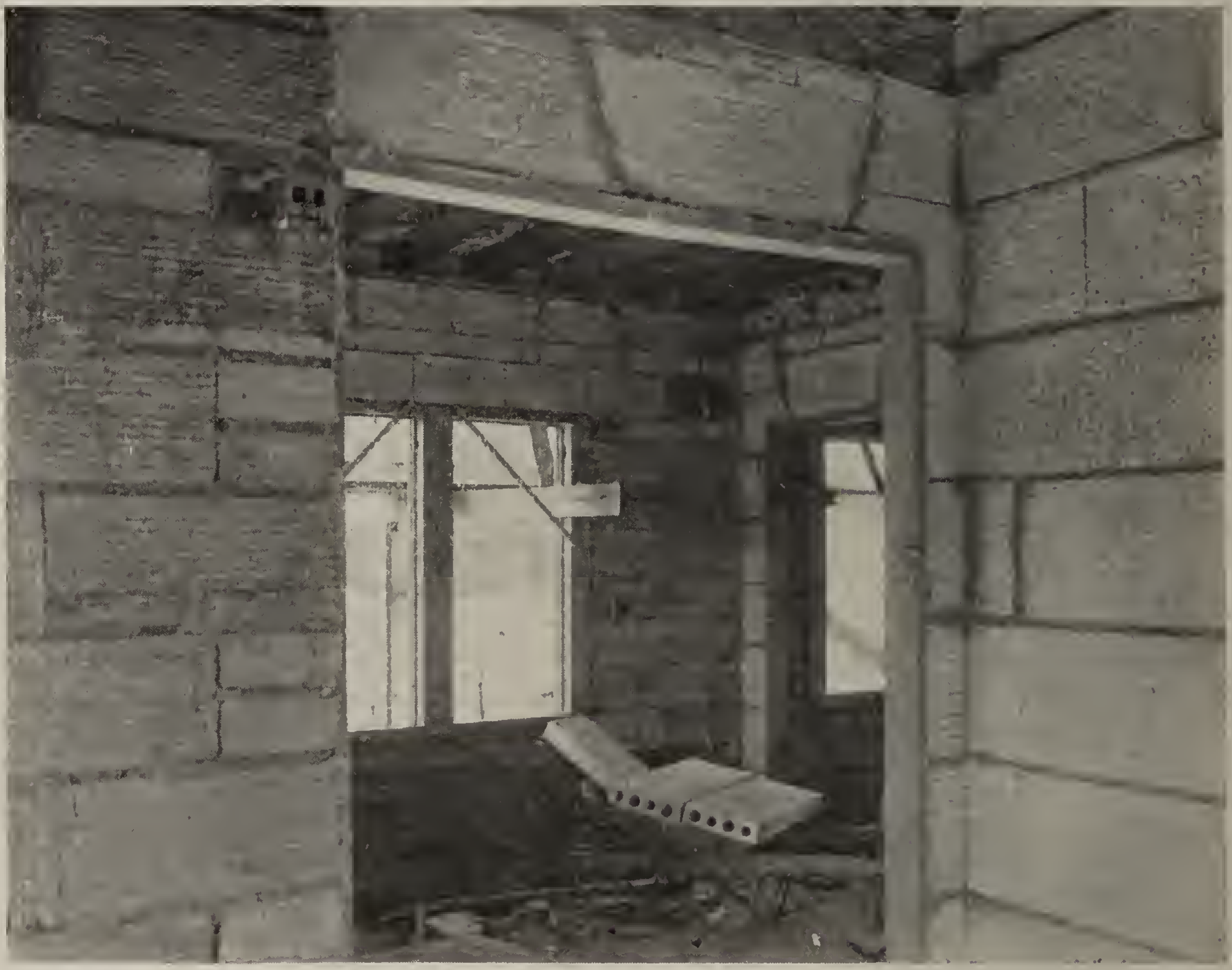
These figures are entitled to considerable attention. They represent money spent for labor and materials in a fair average market for both. They are not theoretical—the money was paid and the house is built. They amount to $2,350—$150 more than the original estimate, but this is due to the alteration in the porch, making it 24 ft. by 7 ft. and the building of a shed in the rear. The figures are:

Hollow tile	$ 228.86
Steel	63.00
Pyrobar partitions	35.00
Tile labor on outside walls	63.48
Lumber	240.00
Carpenter work	150.00
Plastering and stucco work	292.00
Finish lumber	350.00
Finish labor	157.00









These Pictures Show Hollow Tile and Steel Construction.

Painting	160.00
Tar paper and gravel for roof	33.75
Excavating, foundations and all other items, including superintendence	576.91
Total	$2,350.00

This house cost about $300 more than a frame house of the same design, but the fact that loans can be so much more readily secured on a house that is fireproof, and that the appraisal is brought up by the attractive appearance and evident low cost of maintenance, makes it easy to borrow the extra amount, while the lower cost of insurance and the permanency of the investment offsets the slight added interest.

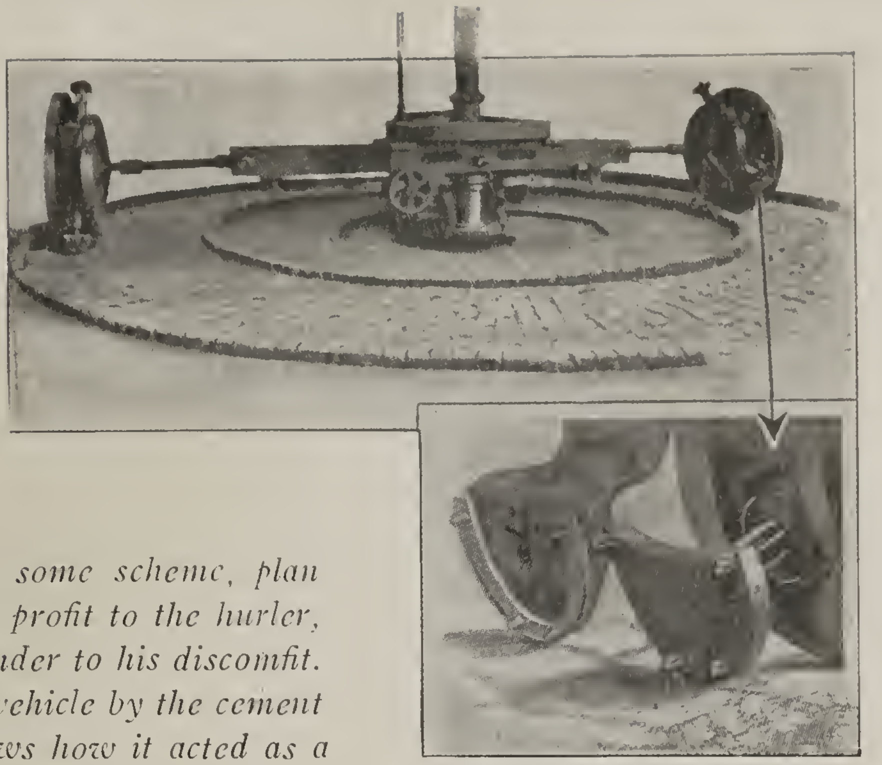
In calculating the value of this house to the man who buys it as a home, we must make allowances for the cost of the lot, the sewer and water connections, and the heating and plumbing. Putting the property at $450, and the others items mentioned at $350, we have a total cost (figured on $2,200) of $3,000. Ten per cent on this amount is $300, which represents the renting value—$25 a month.

If the purchaser has $1,500 in a savings bank, and is receiving four per cent upon it, he, by deciding to invest his savings in this house, loses the interest on the $1,500, which amounts to $60, and pays six per cent on a $1,500 mortgage which he gives for the balance—a matter of $90 a year. Then his total yearly expenditure is $150—the four per cent he loses and the six per cent he pays. By paying $25 a month, or $300 a year, he can pay off the mortgage in from seven to eight years. Provision must be made for taxes, but the amount is inconsiderable on improved property worth only $3,000. Insurance must be paid, whether one rents or owns a home, and the additional amount which would have to be paid for insurance on house and furniture, over furniture alone, amounts to very little. And in this regard, the smaller "fire hazard" will have a bearing, in a lower rate of insurance on household goods, than that which would have to be paid on the same goods in a crowded tenement neighborhood. If due precaution is taken to provide for assessments that may come against the property for improvements made by the city to nearby streets and sewers, all will be clear sailing. Many deeds of sale on all these small houses carry with them a guarantee against assessments for a certain number of years, and it is well to look into this part of the transaction before closing a bargain with the builder.

But in any event, what a contrast this ownership of a home, a home with a "back yard" and a lawn, fresh air and good associations, as against the rented flat, with its bad light, bad air, bad associations and—after years of toil, its sheaf of rent receipts that represent nothing but the amount you have paid to borrow shelter from the winds and the rain.

The Boomerang at Detroit

The Story of a Publicity Scoop that Failed to Work Out Just Like Its Promoters Expected


The Determinator.

A boomerang, according to the dictionary, is some scheme, plan or story sent out to achieve a certain end—to bring profit to the hurler, but which takes a sudden tack and returns to the sender to his discomfit. The recent Road Congress at Detroit was used as a vehicle by the cement interests to boost concrete roads. This article shows how it acted as a boomerang.

At least two facts were prominently brought before the road building interests of the Nation at the Third Annual session of the American Road Congress which was held at Detroit, Mich., Sept. 29-Oct. 4. These were:

FACT 1—That the so-called Detroit "Determinator," used by the cement interests to show the comparative value of concrete and vitrified paving block as a permanent highway material, is acting as a boomerang and instead of presenting concrete as an ideal material and brick as a poor and unsuitable material, it will tell the truth about the matter if given a fair chance to do so.

FACT 2—That the famous Wayne County roads, which the cement interests confidently had expected to use as a great practical lesson and which were expected to teach the value of concrete as a permanent highway material, proved an object lesson to the sincere investigator and presented the true value of vitrified brick, when properly investigated.

When the American Road Congress determined to accept the invitation of Detroit to hold its third annual session in that city the other paving material manufacturers of the country—including those of vitrified paving block—reached the conclusion that the cement interests naturally would dominate the sessions and felt that the meeting was to be in the nature of a "Concrete Show," and that there was little use to interfere with the program.

Accordingly only a bare representation of vitrified paving block was planned. President Deckman, Secretary Blair and Assistant Secretary MacDonald, of the National Brick Manufacturers' Association, with a modest retinue, and F. B. Dunn, of the Dunn Wire-Cut-Lug Brick Company, took exhibits merely to be present.

Kind Providence, however, quite often interferes with man-made plans, and those so carefully laid by the cement interests, apparently, attracted the attention of the General Supervisor of the Universe.

At any rate, the paving "Determinator," on which much had been staked, failed to teach the lesson it had been designed to teach, and the famous Wayne County Roads proved to be "Signs of Warning to Him Who Ran and Read."

The "Determinator" is the machine that was shown by the Universal Portland Cement Company at the cement show in Chicago last Winter. At that time it worked faithfully for its owners, because the material selected for it to work on had been selected with the utmost diligence and care.

First, the concrete construction was of the very best.

Second, the paving block chosen were soft and underburned and selected for the purpose of promptly wearing away.

The result, naturally, was favorable to concrete and the brick crumbled at the first contact of the heavy iron shoes that are attached to the pondrous wheels which are supposed to reproduce the same pounding in hours a horse's steel-clad shoes give a pavement in months.

In Detroit it was different. Providence took a hand and guided the man who was supervising the erection of the "Determinator."

First, the builder showed he had this same kindly, guiding Influence when he set up the "Determinator" underneath a tent instead of beneath the protecting roof of some more permanent structure. The tent, not being expected to be waterproof, failed to keep out the downpour of rain that visited Detroit the first two or three days of the Congress.

Now, it so happens, that the brick interests always have maintained that if the specimen concrete pavement use by the "Determinator" was given the same weather treatment it gets in actual use the results would be far different.

Evidently Providence wanted to give the brick manufacturer an opportunity to prove his point. So the rain fell.

With the pondrous wheels and their iron clad shoes the "Determinator" began to pound the concrete and the brick night and day and before many hours had passed the concrete rebelled and began to crumble. Before two days had passed the mixture of concrete, which had been loosened by the "shoes," and the rain that had seeped through the tent, resembled a mortar bed and a man with a broom had to be kept constantly employed sweeping the slush away.

The surface gradually wore down. Where the steel cross bars were that separated the two different forms of concrete construction and the concrete and the brick the concrete broke away in some places to the depth of an inch the first twenty-four hours. On the main wearing surface, in the track of the "Determinator," a well-worn path was ground away, the top dressing being obliterated almost entirely and the foundation being exposed.

With the vitrified paving block it was different. The man that selected the material made the mistake of taking some No. 1 block—the same material that would have been placed on any highway or street.

What was the result? The rain had no effect on the block, of course. After four days' pounding the "Determinator had not touched the surface of the block and it was in just as good condition as it was when the machine was started on its round of destruction.

The "Brick and Clay Record" representative left Detroit Thursday night of the Congress and, therefore, did not get to see the effect the machine had on either the brick or concrete the last two days of the experiment, but is informed that despite the fact that the "Determinator" was speeded up and ran both day and night that it had very little effect on the brick and continued to pound out the life of the concrete.

President Deckman, Secretary Blair and Assistant Secretary MacDonald of the National Paving Brick Manufacturers' Association, neglected their regular duties during the Congress so interested were they over the results of the "Determinator" and could be seen any hour of the day or night hanging over the little fence that kept the curious throngs back from the machine.

It might be added that the cement fellows were conspicious by their absence.

The Wayne County concrete roads proved a boomerang to concrete just as much as the "Determinator" did. The cement interests had planned tours for the visitors and the guides with automobiles took those who cared to go over the "selected routes," neglecting with characteristic foresightness to drive over the highways that did not look so well and taking particular care to pass over those that showed to the best advantage.

This plan would have worked admirably, as it has been working for several months, had not Kind Providence stepped in again and upset it.

The analytical report made by Paul Green, at the instigation of taxpayers of Highland Park, Ill., where concrete street improvements had been contemplated, and which was published in full in this journal Oct. 4, fortunately for the brick interests and unfortunately for the concrete fellows, was made public during the Road Congress. Copies of this report fell into the hands of a few of the visitors and these soon circulated the array of facts presented, and, taking the hint given by Mr. Green, many engineers and contractors did as he did and avoided the "personally conducted tours" of the cement interests and made trips of investigation unescorted.

These visitors, being sincere in their attempt to find out the truth about the Wayne County roads, went over all the highways and found that Mr. Green not only had not misrepresented the facts but also that he had been very conservative.

The cement interests, however, dominated the rest of the Congress. Practically all of the exhibits were those of the various cement companies or their allied interests, and most of the program was devoted to those friendly to concrete. The only set paper in the entire week's program which gave vitrified brick an opportunity was presented on Wednesday afternoon. This address was by James M. McCleary, county engineer of Cuyahoga County, Cleveland, Ohio. Mr. McCleary's subject was "Brick Roads," and he gave a very interesting and instructive history of the famous brick highways of Cuyahoga County and went into the details of the form of construction. Secretary Blair of the N. P. B. M. A., led the discussion that followed and sent home some telling arguments. Arthur Jackson, president of the International Good Roads Congress, and others spoke good words for brick.

The effect that the Detroit congress had on the visitors may be determined pretty well by the following clipping from the Cedar Rapids, Ia., "Republican" of Oct. 10.

"'I am more firmly convinced than ever that concrete is not a suitable material for permanent pavement,' said Commissioner Zika of the department of public improvements who returned this morning from the Good Roads congress at Detroit.

"'I saw the concrete roads in Wayne county and in Detroit,' continued Mr. Zika. 'They are no better there than here. They are broken and cracked and worn. The officials have tried to fill the cracks with 'Tarvia X' and they have made a sorry job of it.

"'Undoubtedly the paving material that lasts the longest and wears the best—excepting of course the creosoted block—is vitrified brick. That is shown by the condition of the streets in Detroit and in Wayne county. And it was proved to us in a striking manner during the good roads congress last week. They had a circle with four quarters of different kinds of pavement. In the middle of the circle was an iron pole. To this pole was attached a wheel weighing eighteen hundred pounds and out from the wheel was a contrivance which hit the pavement at intervals like a horse's foot wearing a calked shoe. They started this apparatus Monday morning and I watched it every day. By the end of the week the cement pavement was broken and badly worn, both by the hoof and the wheel. But the brick pavement was hardly any the worse for wear.

"'Up in that country they have used a little sheet asphalt but no asphaltic concrete. They are still using a great deal of the old fashioned cedar blocks.

"'The convention was a great success and full of instruction and interest. I found many things which will be helpful to the work of my department.'"

ANOTHER GOOD ROADS BOOST.

Chicago Men Organize Local Clubs and Associations to Work Together for Better Highways.

The Associated Roads Organization of Chicago and Cook County, Illinois, was formally started on its career a few weeks since, at a meeting of representatives of various local clubs and associations, held at the Chicago Athletic Association. The objects of the association, which has existed informally for two months, are embodied in the preamble to the consitution adopted at the meeting, and are as follows:

1. To bring about the cooperation of all citizens, in the matter of good roads and the safe and proper use thereof.

2. Efficiency and economy in the expenditure of all funds devoted to the construction, repair, and maintenance of streets and highways.

3. Uniform, fair, and rigid enforcement of all laws, ordinances, rules, and regulations affecting the use of streets and highways by vehicles and pedestrians.

4. The study of traffic problems, including street lighting and traffic control.

5. Cooperation with government authorities in the matters above outlined and in the securing of the passage of uniform legislation tending to promote the safety and facility of traffic and to better safeguard life and convenience of citizens.

W. G. Edens, president of the Illinois Highway Improvement Association, was named president.

U.S. Government Says Burned Clay Solves Fire Loss

An increase of $10,575,094 in clay products marketed in 1912 over the preceding year, is shown by the annual report of the United States Geological Survey recently published and distributed. This report, which was analyzed in the Oct. 7 issue of "Brick and Clay Record," is of the most vital interest to the clayworker in general. It not only gives the statistics which are indicative of a great activity in the selling end of the industries, but also places the United States on record as declaring that "The enormous fire loss of the country can best be met by the erection of fireproof structures of burnt clay and steel."

Here is the way the Government expert places himself on record for burned clay:

"The present report deals with the products of the clay-working industries, with the exception of the section on clay mining; hence the tables are made up to show the products of clay manufactured and not the production of clay.

"The year 1912 in the clay-working industries was one of considerable progress in many respects, the total value of all clay products marketed in the year being $172,811,275, compared with $162,236,181 in 1911, an increase of $10,575,094, or 6.52 per cent. Compared with the value of the clay products of 1910, hitherto the year of maximum value, the value in 1912 increased $2,695,301, or 1.58 per cent; compared with 1909, the increase was $6,490,062, or 3.90 per cent; compared with 1908, the year of general business depression, the increase was $39,613,513, or 29.74 per cent.

Of the two great divisions of the industry (1) brick and tile and (2) pottery, the former showed the larger increase, both actual and proportionate. The increase in the brick industry was $8,589,490, or 6.73 per cent; the increase in the pottery industry was $1,985,604, or 5.75 per cent.

"The most important features in the industries in 1912 were the large increase in the value of architectural terra cotta, and also of the brick from the Hudson River region, the large decrease in drain-tile, and the excellent condition of the pottery industry. Efforts to improve the quality of all varieties of clay goods, from common brick to the highest-grade pottery, are constantly being made by the clay workers of the country, as is evinced by the new shades and texture of building brick, the new forms of hollow building tile or block, and the new effects in terra cotta that are being put on the market, and by a general improvement in the higher grades of pottery.

"In the brick and tile industry increase was shown in the quantity and value of common brick, in the quantity and value of front brick, in the value of fancy or ornamental brick, in the value of sewer pipe, of architectural terra cotta, fireproofing, tile (not drain), and in the quantity and value of fire brick. Decrease was recorded in the quantity and value of vitrified paving brick, in the value of enameled brick, of draintile, stove lining, and the miscellaneous items. The increase in the quantity of common brick was less than 1 (0.94) per cent over 1911, but owing to the higher prices prevailing in 1912 for this variety of brick the gain in value was disproportionately greater—3.83 per cent.

"The largest decrease sustained by any product was in the draintile industry—$816,064, or 9.25 per cent, and the largest increase was in architectural terra cotta—$2,562,635, or 42.58 per cent.

"Fire brick being used almost exclusively in the iron and steel and coke-making industries, its production rises and falls with the conditions of those industries, and as they progressed in 1912, so did the fire-brick industry show considerable progress.

"In the pottery industry every variety of ware of the classification, except one, showed an increase, and the year was one of notable progress in every way. The value of the imports of pottery decreased over 10 per cent, and the proportion of domestic production to consumption was the highest recorded, 81.45 per cent. The exports of high-grade domestic pottery, though small, increased, and the exports of all clay products increased 36.42 per cent.

"In statements to the Survey quantities are reported for common brick, front brick, vitrified paving brick, and fire brick, but not for fancy or ornamental brick or enameled brick. The average price per thousand increased 16 cents on common brick and 26 cents on vitrified paving brick; it decreased 31 cents per thousand on front brick and 29 cents on fire brick. The average value of product per firm reporting in 1912 was $40,339, compared with $35,055 in 1911.

"The publicity campaign inaugurated by the brickmakers a few years ago, which was vigorously prosecuted during 1912, and the constant fight against the enormous fire loss—a loss that can best be met by the erection of fireproof structures of burnt clay and steel, not to mention the inherent worth of the material itself—both have a tendency to increase the use of the products of clay, so that except in times of business depression their use is almost sure to increase. The prospects are that the year 1913 will show much greater progress in these industries than the year 1912. The great clay-products expositions of the Middle West have served to call attention to the merits of burnt clay for structural and engineering purposes.

"There were no strikes of importance in the clay-working industries in 1912. In Chicago there was a small strike early in the season, also in the Hudson River region. They were quickly settled, however, and had but slight, if any, influence on the industry. The scarcity of labor, however, was felt in many, if not all, sections of the country, and had a serious influence. The higher grades of ware—those that justify distant shipment by rail—suffered from a shortage of cars.

A copy of this report may be secured by writing to George Otis Smith, director, U. S. Geological Survey, Washington, D. C.

Pottery Notes.

The Old Elms Pottery Company, of New Haven, Conn., has increased its capital stock from $10,000 to $50,000.

Cambridge, Ohio, is to have a new $100,000 pottery, which will give employment to more than one hundred operatives. The site has been purchased and most of the stock subscribed for.

The Motor Truck and Its Use in the Clay Plant

The use of the motor truck in most industrial lines is universal. The whir of the motor is heard in every city and village. The steel man, the coal man, the lumber man, the foundry man—in fact, practically every manufacturer—has discarded the horse-driven wagon for the more economical and more efficient motor-driven truck.

The clay product industry, perhaps, is one of the last of the great industries to take up the subject as a solution to the local transportation problem. But that there are in use among the clayworkers of the Nation many motor trucks has been disclosed by a census inaugurated by this journal. The number, in fact, is far larger than was believed to be true.

"Brick and Clay Record," standing as it does for the adoption of all devices and improvements that will tend to cheapen cost of production, is making a careful investigation of the adaptability of the motor truck to the clay product industry. It is the purpose of this journal to carefully analyze the situation as it exists and to gather together accurate statistics and figures with a view of presenting these in a series of articles at some early date.

As a part of this campaign of inquiry and investigation an appeal is addressed to the clayworkers with the request that the form carrying the questions be filled in. These questions have been arranged with a view of ascertaining just how the members of the industry feel towards the motor truck. This blank follows:

One of the problems with which the clay products man has been perplexed, is that of hauling his product from his plant to the car or delivering it to the local trade, at a minimum expense. Business men in similar lines claim to have cut the cost considerably by the use of the motor truck, and already many clayworkers are replacing their teams with trucks.

How is it with you? Is your plant using a truck? We believe the clayworkers all over the United States are interested in this new development, and we are preparing a series of articles for an early appearance in "Brick and Clay Record" which will treat the subject in an exhaustive manner. We have compiled a list of questions which we ask you to answer and return to us by early mail. The information gained will be of great interest to the clay products industry as a whole, and we promise not to use your name or that of your firm unless you so authorize.

Have you a truck?.........Make?.........Size?.........
Are you considering buying a truck?...................
What size truck would be suitable?....................
Country or city hauling?..............................
Condition of roads?..............Hilly?...............
Average length of trips?..............................
How many horses do you keep?..........................
How many months are they busy?........................
How many teamsters do you employ?.....................
Have you been solicited by motor truck mfrs.?...........
If you own a motor truck, will you please have your local photographer make us two or three 5 x 7 pictures of it, at our expense? We want to use them in the series of articles we are preparing............................
Remarks ....
Sign the name of your company here...................
Address ....

Who's Who?

E. P. FOSTER.

It is said that the salesman is the most abused person on earth and it must be true for the salesman admits it himself. There are some exceptions, however, and E. P. Foster, one of the members of the hustling organization maintained by Sales Manager Aubrey of the Bessemer Limestone Company, of Youngstown, Ohio, is one of them. The Bessemer people, as every clayworker knows, makes the justly famous Bessemer paving block. Foster, as every municipal and county authority in the territory over which he travels knows, sells Bessemer block.

These two, in combination—the Bessemer block and Foster—may account for the exception to the rule. Anyway, Foster is never abused, he says. On the other hand he is one of Fortune's favorites, and to prove it he can pull out his order book and show you miles and miles of brick pavements which he has sold this present season and furthermore he can take you over the two big plants of the Bessemer people and show you the empty yards, for the Bessemer people have sold every brick they have made this season and are delivering direct from the kiln all they can make and as fast as they can make them.

Of course there are some salesmen who will explain that this condition exists practically in every yard in the country, but even if that be true, it does not detract from the fact that Foster is not abused, and one only has to look at the picture that adorns the top of this column to prove this statement justified.

Pleads for Cost System

AMERICAN FACE BRICK ASSOCIATION INAUGURATE CAMPAIGN AMONG ITS MEMBERS

With the publication of Bulletin No. 4, the American Face Brick Association inaugurates a campaign for a better system of figuring costs of administration, manufacture, selling and overhead. The Bulletin consists of three closely typewritten sheets and a printed schedule of the various items that enter into these costs and their proper distribution.

This movement toward a complete and exact cost system is one of the campaigns that were outlined at the Pittsburgh meeting held September 23d, when a better system of districting exclusive sales agencies, a uniform filing system, a more efficient system of receiving and numbering orders, and certain matters pertaining to freight rates on face-brick were

Secretary Hollowell, with the advice and assistance of some of the most successful men engaged in the manufacture of face-brick, including L. G. Kilbourne of Columbus, Ohio; E. Curtis Clark, of Pittsburgh, Pa., and J. M. Adams, of Columbus, Ohio, has drafted a valuable document for brickmakers. While admitting the difficulty of preparing a cost system that would fit every plant, he has included in the schedule of cost items everything that would be apt to play any important figure in the disbursements of any manufacturer of face-brick. He calls attention to the mistake that many brickmakers make continually, in not figuring depreciation on machinery, depletion of clay supply, and the like. He points to the fact that kilns have "expectations of life" that can be estimated with considerable exactness, and that a certain amount should be charged off, annually, against the time when the kiln will have to be rebuilt. He points to the folly of placing the cost of new machinery in the "Equipment" account, and calling it an investment, if it has replaced some other machine that had worn out or been proven inadequate by the progress of modern methods.

The question of "bad accounts" is also taken up and shown to be a regular item of cost that must be reckoned with just as surely as the cost of fuel or labor. He makes a strong plea for a daily cost sheet, showing what each department produces and what it costs to get that production. He closes with an offer to devise a cost system that will fit each individual case, giving the individual members of the association the benefit of the experience of the directors, the great majority of whom have made money making brick.

The schedule of costs is made up as follows:

General or Overhead Expense.

Salaries, General Office Expense, Traveling (other than selling), office rent, light and heat, legal expense, taxes, fire and liability insurance, bad accounts, depreciation, donations, association dues, automobile account, office equipment, royalties, stationery and printing, postage, freight and express (other than selling), telegraph and telephone, interest on borrowed capital.

Selling Expense.

Advertising, salaries, commissions, telegraph and telephone, automobile account, traveling expense, samples (figured at yard price), freight and express on samples.

Plant Expense.

GENERAL — Salaries of superintendent, engineer, watchman, plant office help, incoming freight and express, stationery and supplies, postage, telegraph and telephone, general.

COAL—Mining, hauling, dumping, hauling to kilns and boilers, mine repairs, track repairs at mine, cars, mine supplies.

CLAY—Mining, hauling, dumping, feeding, mine repairs, track repairs at mine, cars, mine supplies.

LABOR—Burning, sorting, catching, wheeling and piling, loading, machine crews, trucking, tossing, setting, unloading cars, cart drivers.

REPAIRS—Buildings, machinery and equipment, boilers, kilns, dryers, general.

SUPPLIES—Machine repair supplies, yard supplies, general supplies (straw, sand and manganese) and feed.

If coal is purchased, instead of being mined, or if gas or wood be used, then an account of the quantity of either or each should be kept.

WHY NOT DRESS AS WE BUILD?

The 15-year-old son of E. K. Cormack, vice-president of the Wisconsin Lime & Cement Co., Chicago, dealers in face brick, is an ardent advocate of the durable material and also a young artist who is ambitious to become a cartoonist. The picture shown here is from his pen and bears the caption, "Why Not Dress Ourselves as We Dress Our Homes—Face Brick Fronts and Common Brick Sides?"

What the Tariff Means to the Clayworker

Pottery and tile—that is, floor and wall tile—seem to be the worst sufferers under the new tariff bill, the full text of which, so far as it applies to clay products, follows:

"Fire brick, magnesite brick, chrome brick, and brick not specially provided for in this section, not glazed, enameled, painted, vitrified, ornamented, or decorated in any manner, 10 per centum ad valorem; if glazed, enameled, painted, vitrified, ornamented, or decorated in any manner, and bath brick, 15 per centum ad valorem.

Tiles, plain unglazed, one color, exceeding two square inches in size, 1½ cents per square foot; glazed, ornamented, hand painted, enameled, vitrified, semi-vitrified, decorated, encaustic, ceramic mosaic, flint, spar, embossed, gold decorated, grooved and corrugated, and all other earthenware tiles and tiling, except pill tiles and so-called quarries or quarry tiles, but including tiles wholly or in part of cement, 5 cents per square foot; so-called quarries or quarry tiles, 20 per centum ad valorem; mantels, friezes, and articles of every description or parts thereof, composed wholly or in chief value of earthenware tiles or tiling, except pill tiles, 30 per centum ad valorem.

"Clays or earths, unwrought or unmanufactured, not specially provided for in this section, 50 cents per ton; wrought or manufactured, not specially provided for in this section, $1 per ton; china clay or kaolin, $1.25 per ton; fuller's earth, unwrought and unmanufactured, 75 cents per ton; wrought or manufactured, $1.50 per ton; fluorspar, $1.50 per ton: *Provided,* That the weight of the casks or other containers shall be included in the dutiable weight.

"Earthenware and crockery ware composed of a nonvitrified absorbent body, including white granite and semi-porcelain earthenware, and cream-colored ware, and stoneware, including clock cases with or without movements, pill tiles, plaques, ornaments, toys, charms, vases, statues, statuettes, mugs, cups, steins, lamps, and all other articles composed wholly or in chief value of such ware; if plain white, plain yellow, plain brown, plain red, or plain black, not painted, colored, tinted, stained, enameled, gilded, printed, ornamented or decorated in any manner, and manufactures in chief value of such ware not specially provided for in this section, 35 per centum ad valorem; if painted, colored, tinted, stained, enameled, gilded, printed, or ornamented or decorated in any manner, and manufactures in chief value of such ware not specially provided for in this section, 40 per centum ad valorem.

"China and porcelain wares composed of a vitrified nonabsorbent body which when broken shows a vitrified or vitreous, or semi-vitrified or semi-vitreous fracture, and all bisque and parian wares, including clock cases with or without movements, plaques, ornaments, toys, charms, vases, statues, statuettes, mugs, cups, steins, lamps, and all other articles composed wholly or in chief value of such ware, if plain white, or plain brown, not painted, colored, tinted, stained, enameled, gilded, printed, or ornamented or decorated in any manner; and manufactures in chief value of such ware not specially provided for in this section, 50 per centum ad valorem; if painted, colored, tinted, stained, enameled, gilded, printed, or ornamented or decorated in any manner and manufactures in chief value of such ware not specially provided for in this section, 55 per centum ad valorem.

"Earthy or mineral substances wholly or partially manufactured and articles and wares composed wholly or in chief value of earthy or mineral substances, not specially provided for in this section, whether susceptible of decoration or not, if not decorated in any manner, 20 per centum ad valorem; if decorated, 25 per centum ad valorem; unmanufactured carbon, not specially provided for in this section, 15 per centum ad valorem; electrodes for electric furnaces, electrolytic and battery purposes; brushes, plates, and disks, all the foregoing composed wholly or in chief value of carbon, 25 per centum ad valorem; manufactures of carbon not specially provided for in this section, 20 per centum ad valorem."

Commenting on the new tariff on earthenware, brick, etc., Senator LaFollette said:

"On fire brick and bricks not glazed, enameled, painted, vitrified, ornamented, or decorated in any manner the Payne-Aldrich law imposed a duty of 25 per cent. The new bill imposes a duty of 10 per cent. On bricks glazed, enameled, painted, vitrified, ornamented, or decorated in any manner the Payne-Aldrich law imposed a duty of 35 per cent. The present law imposes a duty of 15 per cent. There is no available data on the cost of production, but the former duties were so high that domestic production and exports were rapidly increasing. Imports had so diminished that they amounted to only one-tenth of 1 per cent of the domestic production.

"Tiles, plain and unglazed, bore a duty under the Payne-Aldrich law equivalent to 69.83 per cent. The new tariff bill reduces the duty to 25 per cent. On tiles glazed, ornamented and so forth, the Payne-Aldrich duty was 46.95 per cent. The Underwood-Simmons bill has reduced that duty to 26.92 per cent.

"On mantles, friezes, and so forth, the Payne-Aldrich duty was 60 per cent. The present bill reduces that duty to 30 per cent. The Aldrich rates on these products were plainly excessive. The total value of the importation on all classes and kinds in 1912 amounted to $136,403, while the total value of the production for this country amounted $5,291,963.

"The production cost was not presented to the committee of either House, but it was charged before the Ways and Means Committee and not denied, that within the last year a combination had been formed among the tile manufacturers of the United States. This was not a general charge, but the names and location of all of the tile companies embraced in the combination were given specifically. The effect of this combination upon prices was also specifically alleged, showing an advance in prices after the combination was formed ranging from 20 to 40 per cent, there having been in the meantime no advance in the cost of material or wages paid by the American manufacturers.

"It is further to be borne in mind that there is a heavy breakage in shipping tile, which, together with the ocean freight on the foreign products, furnishes in itself a considerable margin of protection to the American manufacturer.

"The reduction in the rate on tile on the whole seems to be reasonable."

New Pottery for Brooklyn, N. Y.

The Union Porcelain Works, of Brooklyn, N. Y., has been organized with a capital stock of $60,000. The firm will make a feature of the manufacture of electric porcelain products. Martin Keller, Isaac W. Klees and William K. Taylor are interested.

Kentucky Company Mines Pottery Clay.

A new company, that will pay particular attention to the mining of clay for use in the pottery trade, has been organized at Owensboro, Ky., under the name of the Kentucky-Tennessee Clay Company. The capital stock is $200,000 and the chief works will be in Henry County, Tenn.

How Cox Got Into the Game

(Continued)

BEING THE STORY OF A YOUNG MAN WHO FELL HEIR TO A RUN-DOWN CLAY PLANT

By Iverson C. Wells

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THERE was no sleep for me that night. I paced the floor until the first suggestion of the grey dawn of the early morning crept through the partly shaded window of my room. Then I hurried over to the Widow Simpson's. A single light shone in one of the windows, and, as I peeped through the folds of the curtains I saw the lonely vigil—the mother.

She sat with head bowed, her eyes red from the scalding tears of the night's long struggle. I stood and watched her for several moments. Now and then a sigh escaped through her lips, but, aside from this, she remained motionless, apparently stunned from the blow that had come to her.

I rapped gently on the door of the little cottage. There was a little delay but presently Mrs. Simpson quietly opened the door and stood expectantly, tremulously, her eyes taking me in at the first glance and then piercing into the dim light of the early morning beyond me, as if she expected to see someone else less welcome.

"It is I, Mrs. Simpson," I said. "I came to talk with you about—Charlie."

She led the way into the little sitting room and sat down resignedly.

"I—thought—I thought it was someone else," she sighed.

I looked across the hall to the room which I knew to be that of her son. Her eyes followed my glance.

"He is in there sleeping—with the officer. I persuaded him to try and get a little rest for I knew he would have a hard day of it."

"Is the officer asleep, also?" I asked eagerly, half arising.

"Yes, Charlie told him there was no occasion for him to think he would run away and he is lying on the couch."

Signalling Mrs. Simpson to remain quiet, I tiptoed across the hall and listened at the door. I could hear the labored breathing of young Simpson and his guard and hastening back to the mother I rapidly laid before her my plans.

"Mrs. Simpson," I said, "we must arouse Charlie and without awakening the officer. Get his clothes packed and have them ready. He must take my auto and get away before the officer awakes."

It was fully a second before my suggestion dawned upon the woman. Springing to her feet she looked at me in surprise and then, as the full meaning of my words came to her she staggered towards me.

"My God! You—you do not believe he is guilty, do you?" you?"

She would have fallen had I not caught her wavering figure and assisted her to the chair. There was no time for explanations.

"We can't waste time talking over the matter. We must act and act quickly. Come, get the clothing while I slip into the room and awake him."

Mrs. Simpson arose as if in a dream and moved mechanically across the room and disappeared into an adjoining room. Quietly opening the door that led into young Simpson's room I stood a moment and listened. Across the way was the sleeping officer. Simpson stirred as I looked over toward him and slowly his eyes opened. I motioned him to follow me and placed my fingers to my lips to caution silence.

"What is it?" he asked simply, as we came out into the hall. I closed the door behind us and leading him into the living room, I whispered my plan of escape. Twice he started as if to interrupt me, but I stopped him. Mrs. Simpson came into the room with a small hand bag and set it down in a chair. Then she turned to her son and holding out her arms appealingly cried:

"My boy! My boy!"

Simpson held his mother tightly and turned to me.

"What is the meaning of all this?"

"It means that you are wasting time—that we must hurry!" I replied, seizing him by the arm and thrusting him towards the door.

Simpson shook himself away from my grasp and straightening up his tall, youthful body, he looked calmly at me.

"Mr. Cox, I appreciate the spirit that prompts you to do this—I want you to understand that—but you are laboring under the impression that I am guilty of Sawyer's death. You think I was cowardly enough to do a deed like that, and you are wrong. I am innocent and I expect to stay here and face the music."

Mrs. Simpson sought her son's side eagerly and taking him by the hand, she cried: "I knew you could not do a thing like that—I knew it! I am so glad to hear you—"

I caught Simpson by the arm and impatiently shoved him toward the door again.

"Guilty or not guilty!" I whispered, "you've got to get away from here until we can prove it."

"Yes, son," pleaded the mother, "Don't you think you had better take Mr. Cox's advice. They'll find the real murderer soon, and then you—"

"No! I shall stay here."

I was about to remonstrate with him when I heard a sound behind me. Turning quickly, I saw the deputy sheriff standing in the doorway. It was an embarassing moment for all of us, except young Simpson and the officer.

"I've heard it all," Mr. Simpson, "and I admire your honor," he said, and advancing he held out his hand. "I believe you when you say you are innocent, and that's more than your friend here does."

It was difficult for me to find words to express myself. Of the two of us I must have looked more criminal than young Simpson.

"I was trying to save him," I finally managed to say. "I know what trials are—they drag, and there is no telling which way a jury will go—I—"

"Mr. Cox, I understand how you felt about your friend, but can't you see that you were doing him more harm than good by suggesting that he run away? That would have been an open admission that he was guilty."

* * *

Later in the day Sheriff Black and his posse returned from their all-night hunt. I learned of their ill-success shortly after and rushed over to talk with him.

"We have been unable to find a trace of anyone," he said, "and we have scoured the country around for miles."

"Perhaps the murderer took an electric car and escaped that way," I suggested.

"No, we have questioned the crews of the early morning cars pretty closely. There were only two passengers on any of the cars between the hour that you say Sawyer was shot and daylight. These have given a good account of themselves."

We went over the events of the night and day before but I was careful not to say anything that would incriminate Simpson.

"Suppose we go over and talk to young Simpson," the sheriff suggested. "Perhaps he may be able to give us some information that will help solve this case."

We started out for the Widow Simpson's house and stopped in the road where Sawyer fell, long enough to examine the scene of the tragedy. There was no sign of a struggle and whatever footprints the slayer may have left had been obliterated by the passing of scores of persons since the crime was committed.

"Which way did you say the fellow ran after he fired the shot?"

I came very near answering Sheriff Black's question but caught myself. Evidently he observed my hesitation for he looked at me rather closely as I finally replied:

"Why, I could not tell—it was dark, you know."

We resumed our way over towards the Simpson cottage. Black was walking close to the edge of the road, his head lowered as if in thought. Suddenly he stooped over and picked up a small object. I turned and saw that he held a little black memorandum book in his hand. He eyed it critically and opened it. He started and looked back toward the spot where Sawyer fell, some thirty or more feet away. Without taking me into his confidence he placed the book into his pocket and continued his way with me, following quietly but curiously behind. As we reached the house I stopped Black.

"Did you discover something of importance—some clew?" I asked, barely able to hide my anxiety.

"I think I know who the slayer of Sawyer was," he replied quietly and turning into the Simpson yard he opened the front door and walked in unannounced. It was with considerable alarm I followed closely behind him.

Young Simpson and his mother were in the little living room alone. The deputy sheriff was reclining on the couch which had afforded him a resting place during the earlier hours of the morning. Simpson sprang forward with a hopeful look in his eyes.

"Have you some news?" he asked eagerly.

"Simpson, is this your book?" the sheriff asked evading the question, and pulling the small memorandum from his pocket.

Simpson gave it a glance and then looked up in surprise.

"Why, yes. Where did you find it?"

"That is sufficient," Sheriff Black said quietly, replacing the book in his pocket and advancing towards the youth. "I arrest you, Simpson, for Sawyer's murder," he added grimly.

There was a low groan at my side, and I turned just in time to catch Mrs. Simpson, who had fainted.

(To be Continued in the Nov. 4 Issue.)

JOINS FAMILY OF DUNN PATENT LICENSEES.

The Southern Clay Manufacturing Company, of Chattanooga, Tenn., operating the three largest paving block plants in the South, has joined the family of licensees authorized to manufacture the Dunn Wire-Cut-Lug paving block, and the necessary machinery, including the Dunn patent cutter, is to be installed immediately and the output of the concern turned into the new block.

With the addition of the Southern Clay Manufacturing Company to the list of licensees there are now seventeen companies operating under the Dunn patents, many of which own two or more plants. The total output of these plants is more than 300,000,000 block annually—all of which eventually will be devoted to the making of the Dunn patent block.

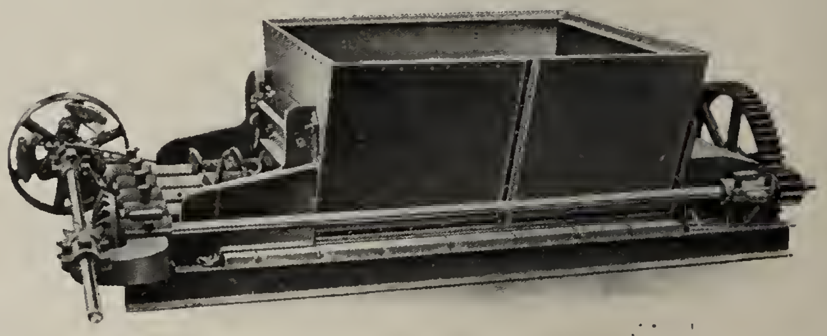
The three plants operated by the new licensee are located at Robbins, Tenn., Coaldale, Ala., and Chilhowie, Va., and are the largest paving block plants in the South. W. M. Lasley is the president of the company and is classed among the most progressive of the clayworkers of the South.

The territory covered by the three plants is a fertile field for the Dunn block as an unusual amount of permanent paving is being done, not only in that section but all through the South, particularly in Tennessee, Northern Alabama and Northern Georgia.

The action of the Chattanooga company means that not only will it have the privilege of manufacturing the Dunn block with its wire-cut-lug features and other improvements, but that it also will have the advantage of the advice and assistance of the Dunn engineering organization at any and all times.

STEELE PRESENTS NEW CLAY FEEDER.

In presenting this machine to the clayworking fraternity, J. C. Steele & Sons, of Statesville, N. C., believe they have made a distinct advance on all previously designed machinery for the work this machine does. Affording a steady, even feed of clay to the pugmill, it eliminates the "hit and miss" method in vogue at plants where the clay is fed by hand power. It is a multiple shaft machine, fitted with a series of chilled knives, so devised that they will not clog or catch roots.



The machine weighs approximately 6,500 pounds, and is very simple and substantial. The driving gears are enclosed, and run in an oil bath. Any knife or shaft can be taken out by removing one bolt, in the spur gear type, or five bolts in the bevel gear type. The hopper into which the clay is dumped, holds 2-¾ yards and is arranged for an extension to hold any amount desired.

Being made in both spur and bevel gear drive, as may be desired, a friction clutch pulley can be used at either end of one type, or at either side of the other, the latter being the type shown in the above illustration.

Questions and Answers

A DEPARTMENT FOR THE SOLUTION OF THE KNOTTY PROBLEMS CONFRONTING THE CLAY WORKER

This department was inaugurated to be of material benefit to the readers of "Brick and Clay Record" and no charge is made for the service given. The advice of the world's recognized authorities in ceramics is offered to clayworkers who are invited to avail themselves of the opportunity to have their problems solved here. Should a reply be desired by letter enclose a stamped and addressed envelope for reply.

Piece Work vs. Days' Wages.

203. *Michigan—We are trying to institute a cost system in our brick plant and are confronted with the question of piece-work. The clay is mined piece-work, but days' wages are paid from the moment it reaches the plant proper until it enters the pug-mill. The men's pay is then based upon the day's run up to the time the brick are placed in the dryer. Piece-work governs the kiln-setters and tossers and begins again as the kilns are being emptied, when the sorters and wheelers are paid on a per thousand brick basis. The labor cost stops if the brick are loaded from kiln to car, but if they be stocked in the shed, an additional amount is paid for wheeling (and sorting, if any) from shed to railroad-car or wagon. Superintendent, burner, cart drivers, "handy men," engineer and fireman are paid by the month. It seems a complicated system, and makes it almost impossible to tell what the various processes are costing us. Our men consider themselves badly paid and show a disposition to leave every time a new industry is started in the neighborhood. At the same time, our labor cost is high, compared to what we understand is paid at other yards not very dissimilar from our own. Is there a way of putting our yard on a weekly, daily or hourly pay basis without increasing our labor cost, production considered?*

If, as "Brick and Clay Record" figures, you mine your clay, the piece-work system at the mine is unquestionably best, first—because it is applied to men over whom but little supervision can be maintained, and second—because the same class of labor is used as is employed in coal mines, where custom has made piece-work (that is, pay based on certain sized cars) the recognized basis of employment. Even though days' wages were substituted here, a daily "task" would be set, and the miner who did not get out his specified amount of clay each day would be called to account. In other words, his work only shows in the amount he produces and since all of his skill, his strength and his energy is put into quantity, the only equitable basis of payment is based on quantity.

At every succeeding stage of the brickmaking business, however, days' wages are preferable. With good superintendence, the incompetents, the mal-contents, and the time-killers can easily be weeded out, and rewards, in the shape of better pay, given men who show a disposition to speed up and help the employer. Under the piece-work system, good men are held down to a "scale" by the incompetence of their fellow-workmen and discouraged by the fact that any recognition of better service is impossible, since it would mean a "raise in the scale" that would benefit the incompetent as much as it would the man who was conscientiously trying to serve his own interests by giving his employer the best that was in him. Labor, like water, soon finds its level, and thus it is that the "best men" are the ones that leave to seek other employment —employment in which their ambition and willingness to do a little more than a "day's work" will be recognized and paid for.

Piece work makes the men, to a certain extent, the judges of how much or how little work they need do, and the man without a family to support or without any laudable ambition, quits working hard as soon as he feels he has made enough to supply his immediate wants. The fact that he is satisfied with a thin pay envelope makes him feel justified in "laying off" the day after a holiday, or when the weather is too hot or too cold. He exchanges two or three dollars in the pay envelope for the personal gratification of his physical comfort and does not give any thought to the loss his employer takes, through decreased production caused by one man's desire to work only when the working conditions are favorable.

The piece-work system is supposed to speed up the workmen. The falseness of this position is found in the Labor Union principle, that, while demanding a certain sum per hour, privately sets the amount of work each man shall do in that hour—that is, it says he shall do no more than a certain amount. No employer will be foolish enough to believe that this rule is made for his (the employer's) benefit.

Wants Cartons for Sample Brick.

202. *Pennsylvania—Can you give us any advice regarding ie best kind of carton to use in shipping sample brick by parcel post or express? Are the collapsible kind better than the box and cover variety? Can you give us the names of concerns who make a specialty of this sort of accessory to the claycrafter's work?*

If "Brick and Clay Record" readers will write to this office, giving their views on this subject, it will, perhaps, open an interesting and valuable discussion. The new parcel post ruling makes the cost of sending samples less than it was under the original rates, and, by increasing the weight limit, puts the service very much at the disposal of the brickmaker and his fellow clayworkers. By this time, some of the concerns making corrugated cardboard cartons, or other forms of wrapping for parcel post shipment, must have recognized their opportunity, and made up something that has merit. It may be that some brickmaker has suggested something. In either event "Brick and Clay Record" will welcome information and suggestions along this line.

Wants to Prevent Scummed Brick.

177. *Pennsylvania—We have a Younghren Producer Gas Kiln and are having trouble with a scum on the brick. We feel satisfied that this is put on, but do not know how. We also have difficulty in raising the heat above 1700 or 1800 degrees and feel that we ought to go beyond this to burn good paving block and to get the color we want. We use a red burning shale.*

Answering the first question, "Brick & Clay Record" believes that the scumming is due to soluble salts in the shale, and suggests the hydrochloric acid test mentioned in another answer given one of our correspondents, in this issue. If that test proves that the shale has soluble salts in it, the carbonate of barytes experiments should be made, and if these fail, it would be well to look to the dryer, to see whether the brick are being scalded, as is possible in a steam-heated dryer, or, if the brick be dried with waste heat, it may be due to the action of the sulphur fumes from the coal. The latter will be harmless if the alkali in the clay is neutralized by the carbonate of barytes. By eliminating the question of soluble salts and dryer trouble, you bring the question right down to the fuel, and, if the fuel you are at present using is not giving you the required heats, it may be of a quality that not only fails to do the work, but also spoils the brick. Try the acid test and the barytes experiments, and, if these do not help, write this department again and we will have a personal inspection made of the plant, the clay and the burning proposition.

Is Clay Suitable for Papermaking?

172. *Ohio—In a recent issue of "Brick & Clay Record" I noticed an article on clays adaptable for the manufacture of paper. I have recently located a very fine deposit of white clay which I believe will answer the purpose. Will you put me in touch with the proper parties to whom I can submit samples of the clay, with a view to selling it for the purpase named?*

Anyone interested in the purchase of clay for the above purpose, or for any other purpose wherein white clay would be of use, will confer a favor upon this journal by writing the above correspondent, whose address will be given on request.

Wants to Buy Red Burning Sand.

176. *Colorado*—Will you be kind enough to put us in *touch with parties who have red-burning sand for sale?*

"Brick & Clay Record" will be indebted for any information its readers may be able to give on the above subject, and will furnish the above correspondent's name to any firm or individual that has sand of this character for sale.

Wants to Improve Color of Brick.

171. *Michigan—We are having trouble burning our brick; where they touch, they have a dark red color and the center is the same, but where they do not touch, they are pale and bleached in appearance.. On some of them, the dark red of the inside comes to within a half inch of the outside. We set the bricks on edge, two together, tying across in the regular way. We use sulphur water to mix the clay, and would like to know if the water, the method of setting or the clay itself is causing the trouble.*

Evidently the clay contains soluble salts in the form of alkalies, causing the exposed parts of the brick to show pale and bleached. What is the remedy? Carbonate of barytes will neutralize the alkalies. Experiment with from one to five ounces of barytes to twenty-eight pounds of the clay. The correspondent states that the dark red on some brick comes to within a half inch of the outside surface; by holding the heat longer and burning harder, this defect will disappear. It may be that the sulphur water used in mixing the clay has its part in bringing on the trouble. To determine whether this is so, mix some clay with rain water and mark the brick so made, setting them at the same place in the kiln and burning under the same conditions as a similar lot, mixed with the sulphur water. The correspondent does not state what kind of fuel is used, and consequently we cannot say whether this is having an effect or not. If the bleaching is brought out like whitewash, the clay should be tested by putting a few drops of hydrochloric acid or strong vinegar on a small lump of the raw clay. If it foams, then the trouble is caused by soluble salts, and the remedy is unquestionably carbonate of barytes.

"Brick and Clay Record" published an article on carbonate of barytes and its use in the clayworking industry, in the issue of June 1, 1913, page 979. In it the fact was brought out that, at present prices, as quoted by concerns that sell this material to the trade, a brick that requires one ounce to twenty-eight pounds would take enough of the barytes to add from 43c to 47c per M. to the cost of the brick. If the amount of soluble salts in the clay necessitated an equivalent of five ounces to twenty-eight pounds of clay, it would increase the present cost of the brick by from $2.10 to $2.35 per M. As a rule, the latter figures would be prohibitive. Troubles such as the correspondent seems to have are solved by a process of elimination, and since the trouble may come from the clay, the water, the process of drying (see reply to 178, New Jersey, this issue) or the coal, it would be well to test the water first, then the clay—using the hydrochloric acid test. Following the latter, if positive that the clay is at fault, with a full carbonate of barytes test, then have some drier expert look over the dryer system, and lastly, *very much lastly,* consider a change in the fuel.

Wants Addresses of Alumina Reduction Plants.

190. *Pennsylvania—We have a white clay that has been burned up to 3,500 degrees and has shown no effect, whatsoever, of the heat. It is as white as when it was put into the kiln. Our clay is soft and plastic, and one deposit, of which we have about twenty million tons, runs 44 per cent alumina, 54 per cent silica and 8 per cent of lime—no iron or magnesia. We think that this clay would be of more value for industries other than brickmaking—can you put us into communication with parties who could use such clay? We thought of trying the alumina reduction plants and would like to have the addresses of some of them.*

If interested firms will write "Brick & Clay Record" the correspondent's address will be furnished them.

Wants Clay Tested for Dry Press Brick.

184. *Montana—Where can I send some of my clay to be tested for the manufacture of a dry-press brick? I am making a fine soft-mud, sand mold brick, but I am of the opinion that the clay will make a good dry-press brick, and if so, I will be in the market for machinery to manufacture same.*

Any of the State Universities that have ceramic departments can make a test of this clay that would be of value, giving a theoretical report which should be followed by a practical test, made by a brick works engineer or a manufacturer of dry-press brick machinery. Rutgers College, at New Brunswick, N. J.; Alfred University, at Alfred, N. Y.; Ohio State at Columbus, Ohio, or Illinois State at Urbana, Ill., will furnish a choice, so far as the theoretical end of the test is concerned. The advertising pages of this journal will supply the names of the most dependable engineers and manufacturers of dry-press brick machinery.

Wants to Change Up-Draft to Down-Draft Kilns.

192. *Pennsylvania—I have three square up-draft kilns that I want to change to down-draft, if it can be done without too much expense.*

If the kiln walls are in good shape, and if the kilns are wide enough to permit of the change, they can be made into double chamber down-draft kilns at very little expense. For this purpose the kilns should be at least 30 ft. wide, for, if narrower, the wall that must be built lengthway through the kiln would reduce the size of the chambers on each side of the wall, thus reducing the capacity. It is positive that if the kilns are only 24 ft. to 27 ft. in width, they cannot be changed to the double chamber type, for the reason just given. At the same time, they would be too wide for single arch down-draft kilns, as no crown can stand up under these conditions. If the kilns are long enough, the wall can be built cross ways, and so make the two chamber type. But if the kiln walls are not solid and plumb on the inside, it would not be advisable to make the change, but rather to tear down the present construction and build new kilns with the old brick and as much new material as would be necessary.

Wants Addresses of Correspondents.

201. *Illinois.—Under the heading of Machines and Equipment, in your Sept.* 15 *issue, you call attention to the machine for sizing tiles, made by the Automatic Tile Machine Company. I have been asked by a large firm of tile makers in England to obtain full particulars as to this machine, its price, etc. Will you please furnish me with the address? I would also like to have the name and address of* "198 *Indiana," who asks for information as to the newly erected pottery in Chicago.*

The desired information has been given this correspondent.

The Effect of Artificial Drying on Clay.

178. *New Jersey—Will you kindly let me know what effect as to strength and quality artificial drying has on clay, when dried at a temperature of* 140 *to* 180 *degrees F.*

Ellis Lovejoy, answering the above question, says: "It depends entirely upon the character of the clay. Some clays can be put into dryers and immediately subjected to temperatures much higher than 180 degrees, without in any way affecting the strength and quality, but there are other clays which are so tender in their drying behavior, that the lower temperature mentioned (140 degrees F.) would cause excessive loss. The effect upon ware depends upon two factors. First, the rate of evaporation from the surface of the ware; second, the rate at which the water within the ware comes to the surface. Whenever the rate of evaporation is greater than the rate at which the water is brought to the surface by capillarity, the ware invariably cracks. When the rate of evaporation equals the rate of capillary action, we are on the dividing line between sound ware and damaged ware. When capillarity brings the water to the surface faster than it is evaporated from the surface, the ware will dry safely regardless of temperature, assuming, of course, that the ware is symmetrical in shape and dries uniformly."

Size and Speed of Exhaust Fans, Etc.

In "Questions and Answers," Sept. 15 number, a letter was published, which had been written by Edward C. Grunder, of New Comerstown, Ohio. In it he asked how large an exhaust fan was required to remove the moisture from a twelve track waste heat dryer, using a nine foot blower at the dry end, and at what speed the fan should run. He also wanted to know what grade should be given the tracks in the dryer, to permit the cars to run down by gravity. In answer to at least a part of these inquiries, the Trautwein Dryer & Engineering Co., writes: "It is hard to say, from the meagre information which the correspondent gives, whether his fan is large enough, or not. He does not say what kind of ware he is drying, or from how many kilns he draws his heat. A little more information on the subject would make an answer much easier. The grade on ordinary dryers should be, with track and cars in good shape, 12-in. fall to each 100 ft."

Wants Data on Oil-Burning Processes for Brick.

191. *British Columbia.—Have you published any articles dealing with brick burning by oil or could you inform me as to any publication that does deal with this subject? I can find nothing about it in the old country and the "British Clayworker" refers me to you.. I am expecting to contract for* 50,000,000 *brick, to be burned with crude oil, for an Eastern Power, and it would be of tremendous advantage to me to be posted in the matter. Can you tell me where I can see a plant at work, in which crude petroleum is used as a fuel?*

We know of no publication devoted to the subject and have no books listed that deal exclusively with it. We have referred this correspondent to several firms in the United States that manufacture oil-burning equipment, and believe he will receive the information he wants, through them. The oil-burning systems installed in the plants of the Illinois Brick Company, in Chicago, are, perhaps, the largest in this country, and our Vancouver friend will find a visit to Chicago a highly profitable one.

Wants Dull Finish for Shale Floor Tile.

158. *Mexico.—Through your valuable paper, in "Q. & A." department, we would like to see something about putting a dull finish or glazing on floor paving tiles made of a good shale.*

In order to furnish a glaze which is at all likely to serve the purpose, it is necessary to know something of the fire at which the body matures, or at least the fire at which it is proposed to burn the glaze.

Information Wanted.

Elberton Brick Company, of Elberton, Ga., wants to have some of its fireclay analyzed.

The Sweetser (Ind.) Drain Tile Company wants information relative to elevators and conveyors.

A. M. Hochgesang & Sons of Jasper, Ind., want the names of firms manufacturing draw lime kilns.

Harris Barth, 111 Myrtle St., Corning, N. Y., wants information relative to drills for blasting shale rock.

The Wilson Brick Company, of Wilson, Conn., wants information regarding automatic strikers for soft mud brick machines.

Albert A. Plagge, 1606 Bird St., Oroville, Cal., wants catalogues of brick making machinery, including both stiff-mud and dry-press.

Yankee Hill Brick Company, of Lincoln, Neb., wants information relative to motor trucks, clay gathering machinery and aerial trams.

S. A. Armstrong, Asst. Prov. Secty., Parliament Bldgs., Toronto, Canada, wants information relative to crushers and pulverizers for clayworking plants.

Oliver Brumbaugh of Louisville, Ohio, wants information on dry and wet pans, hollow block machinery, kilns, kiln doors, etc., steam shovels, tile machinery and brick wagons.

The What Cheer Clay Products Company, of What Cheer, Iowa, wants information, price lists and descriptive literature on chemicals such as in use in clay working plants.

J. J. Middlesworth, manager of the Midland Tile Works, Midland, Mich., wants to buy some sort of conveying and storage system for his clay, which is, at times, too soft to work directly, on account of rains.

F. W. Moore, of Moore Brothers Company, Joliet, Ill., wants books descriptive of brickmaking machinery and methods and statistical books on brick production in the various classes of brickmaking throughout the country.

Granger Brick & Tile Company, 101 W. Yokima Ave., North Yokima, Wash., wants information on clay cars, dryer cars, etc., and on dryers. It also wants to know about the various types of silos and cost of construction.

John Lamberson, superintendent of construction, State Reformatory, 514 Eleventh Street, Huntingdon, Pa., wants prices on second-hand clay and shale mills, wet pans and pug mills.

W. N. McLeod, Cia de Madera Alto Parana, Corrientes, Argentine Republic, formerly with the Sumter Brick Works, at Sumter, S. C., wants catalogues and information on brickmaking machinery sent him at the South American address.

Face Brick

Anti-trust legislation to the contrary notwithstanding, what the face-brick business needs is something to curb production. The aim of every manufacturer is to run to capacity—to "get as much out of the plant" as he can. In this way he figures that he "cuts overhead" by increasing production. Many students of business economy will tell you that this is a sound principle, since idle machinery is worse than idle capital and a plant that is not "getting out its full capacity" is, according to the creed, losing money. This would be correct in every detail if demand kept pace with supply—if the present equipment were held at its present production and no new plants started except at points where distance from brick producing centres made the cost of brick prohibitive and so opened the way to less stable forms of building than brick would give. But since there seems to be no way of judging what the demand of a coming season will be, new plants are started and old plants enlarged at the end of every good building year, with a result that "clean sheds" are an unknown quantity on the average yard, and in every period of depression enormous stocks of face-brick are piled up, to be sold, later, at prices that are lower than is warranted by the cost of production, increased by the interest on the capital that is borrowed to enable the manufacturers to carry the brick over until the "season" begins. Government statisticians give figures on the annual production, but there seems to be no way, at least now, of knowing how consumption keeps pace, except it be in the records of receiverships that are so lamentably frequent.

With the avowed policy of extending financial aid to small contractors, and thus enabling them to go into competition on work that requires more capital than that which they at present possess, the Vinton Brick Company, which was recently organized at Dayton, Ohio, has taken over a plant at Vinton, a small town about seven miles southeast of McArthur, Ohio. Officers have been elected, their names being: President, S. J. Beach, of Pittsburgh, Pa.; vice-president and general manager, W. L. Weems, of Dayton, Ohio, and secretary, Ira A. Beeghley, also of Dayton. Offices will be maintained at Dayton, Ohio. In addition to a regular output of high grade face-brick, the company will also make paving brick. There are ten kilns on the plant at Vinton and they are all being worked to their fullest capacity.

City officials at Coshocton, Ohio, are planning to take into the city limits, property that heretofore has been outside; this outside territory includes the property and plant of the Coshocton Brick Company, a plant that is famous for its production of high grade ironspot face-brick. If the plan is carried out, it will subject the brick plant to a higher rate of taxation than was formerly assessed against it and the move is being fought by the management of the clayworking company.

Another plant was added to the "Tapestry" family, when the Steffler & Brown properties at Darlington, Pa., passed into the hands of a newly organized company, consisting of J. Parker B. Fiske, Thomas W. Peirce, F. T. Owens, F. H. Clough and J. G. Whitmore. The company is incorporated for $25,000 and will be known as the Darlington Clay Products Company.

"Hy-Tex" brick were brought strongly to the fore in the minds of Chicago builders, when, on "Fire Prevention Day," the Hydraulic-Press Brick Company took generous space in Chicago's leading dailies and called attention to the highly fireproof qualities of brick as a building material. It was clever advertising as well as a showing of a proper civic spirit. The more brick, the greater the fire protection.

Because the Bankers' Surety Co., of Baltimore, Md., which last fall purchased the plant of the Champion Brick Co., at Wellsville, O., failed to carry insurance on the property, Common Pleas Judge James G. Moore, at Lisbon, O., instructed Receiver George A. Frink to bring a suit on the note and mortgage for the purchase money, and again force the property to sale. A condition of the previous sale was that insurance of not less than $7,500 be carried on the buildings. The receiver maintained that the surety company had not carried out its agreement in this instance, hence the court action.

By razing two small kilns and adding the space so gained to yard room already available, the Fallston (Pa.) Fire Clay Company will make room for three additional large kilns, which will add materially to the capacity of its plant. Face brick has been made a feature at this plant during the past year, and under the salesmanagership of T. P. Cuthbert, enough business has been secured to warrant the increased output which the additional kilnroom will provide.

Rogers M. Combs, vice-president of the Thomas Moulding Brick Company, of Chicago, Ill., has been appointed chairman of the Brick Manufacturers' Division of the International Association of Rotary Clubs, which held its annual convention at Buffalo, N. Y., Aug. 17th to 22nd inc.

The Star City Brick plant, of Cumberland, Md., long idle, has been purchased by Robert and Charles Rarrickman, who will remodel it and put it into operation. The square kilns now in place will be replaced by round kilns of the modern type.

Brazil (Ind.) capitalists are organizing a company to manufacture clay products on a site that has been practically agreed upon, west of the city. Plans are now being made for a modern brick plant.

Contracts for the face brick for the new Masonic Temple at McMinnville, Oregon, and for the bank building at Sheridan, Oregon, have been secured by the Pacific Face Brick Company, of Portland.

DENVER BRICK MEN FACE CHARGES.

Grand Jury Probing Charges Made by Contractors Who Allege a Brick Trust in Colorado Capital.

The cost of manufacturing brick, the selling price to the builder and a probe of the relations between Denver manufacturers of brick are things now receiving the attention of the grand jury in connection with charges made by contractors that a "brick trust" exists in Denver. The record of trust investigations to date by the grand jury covers the lumber business and the fruit and commission house trade.

Witnesses before the grand jury recently were William B. Robinson, secretary-treasurer of the Colfax Pressed Brick Company; James E. Young, brick contractor, and David D. Seerie, vice-president of the Denver Sewer Pipe & Clay Company.

The Superintendent

A DEPARTMENT CONDUCTED FOR THE INTERCHANGE OF IDEAS IN METHODS OF MANUFACTURE

Contributions from our readers are solicited for this department on any subject pertaining to the manufacturing end of the industry. Short cuts and labor-saving suggestions are particularly sought. Address all communications to the Editor of the Superintendent Department. Brick and Clay Record, Chicago.

In the administration of a brick plant, the handling of the employes, so as to make them earnest and loyal co-operators in the upbuilding of the business, is one of the most pressing and important problems. Particularly is this true of the day laborers, the loaders, and pilers, and other unskilled workmen, whose lives are not brightened by much prospect of betterment in the future of their mundane existence.

How much can be accomplished by giving careful study to these questions is evidenced by the results which have been obtained in one of the biggest brick concerns in the East. When a new general superintendent came into office recently, he found that the loyalty of the employes was not of the all-wool and-a-yard-wide variety, by any means.

"In fact" he admitted, in telling of his experiments, "it seemed to me as if someone had tacked a sign up, over there on the wall, which read, 'All hope abandon, ye who enter here!' The employes, in the clerical departments as well as out at the yards, seemed to have the idea that there was no future advancement to be looked for as long as they remained on our pay roll. Some were grumbling for higher wages. Others, I know, were seeking jobs elsewhere. And honestly, there wasn't a good reason for any such condition, so I determined to make some changes."

This man has been in the brick business long enough, and has handled men long enough to have passed the experimental stage. What he was about to try was not, in any sense, an experiment. It was putting into practice the theories which he had seen were practicable in a long and varied experience.

He went into the yards and called all the laborers together. They had been kicking for higher wages a long time, and this man knew it. And he started right in by telling them that he sympathized with them; that he was a high wages man, and believed that they deserved much more than they were getting.

"But," he said earnestly, "from present appearances, I don't think you're going to get any raise, just now!"

He saw their faces fall, and heard low murmurs of disgust. That nettled him into making his remarks a little more emphatic than he had intended originally.

"You see those machines," he shouted, pointing to the engine room. "They work regularly all the time, don't they? Come picnic, come circus, come what not, they keep going, without grumbling and without disappointment. They are always on the job. We can always count on them. That's the kind of men we want; every-day-in-the-week men; men who are here on time and work straight through. That kind of man won't have any kick about wages."

And with that, this new superintendent went into a detailed explanation of bonuses which he proposed to start. Each man who was there every day in the week was to get a 15 cent bonus each day. The man who missed a day lost half that bonus, and the man who missed two days didn't get any at all that week.

There was dissension among the men; this new superintendent saw that. But he knew he was right, and blazed at them, "The men who amount to anything here, and who have been fighting for a 15-cent a day raise will get it all right, because they don't lose a day and will get their bonus, but these no-account shiftless fellows who work three or four days a week, won't get anything, and I'd be much better satisfied, if they'd quit right now."

Not a man missed a day for 40 days after that. So well did this plan of giving the men something to "work on springs for," pan out, that it was extended further. An honor system was started, and each honor man receives a certain percentage on the amount paid on preferred stock of the company. This, too, has worked well.

Now this company has no more disloyal, grumbling employes. It has created an *esprit de corps;* has aroused an energy and interest in the business of the firm which before was lacking, and it is producing wonderful results.

A Lesson in Safety.

The following extract from an article in "Safety Engineering" carries a lesson to the superintendent of every clay working plant. By mentally substituting every hazard to life that he knows to exist in his machine shop, mine or yard, for the points mentioned in the story, he will read a lesson which, if followed, may save himself or some fellow employee from being wrecked and thrown into the human discard, if not brought, long before his time, to the wooden box and the little mound in the grave-yard.

"All railroad men are not chance takers, but there are a few," says the yardmaster of a railroad.

"A trainman who throws the switch and does not lock or latch it, whichever is required by rule, is heading you into trouble. A fireman who fails to put the water crane or other appliances in their proper place may cause you to be knocked from your train. The flagman who does improper flagging may do a job of short flagging on you some day and let you collide with his train.

"The engineer and conductor who run their train by danger signals carry you to the hospital. The operator who sleeps under a clear signal and wakes up at the call of the key and takes an order for your train after you have passed heads you to the cemetery. It is such men that we brand as chance takers.

"You are very familiar with the chance-taker and it is your duty to get him in line with this movement or point him out to one of the officials. You owe this to yourself, your family and the company. You certainly know that unless you get him, he will get you, sooner or later."

If you have a "chance-taker' on your plant and cannot reform him *at once,* it is better to let him go than to be a "chance-taker" yourself.

Common Brick

The Spencer Mountain Brick & Stone Company, of Charlotte, N. C., will build a plant in Gaston County, N. C.

C. A. Curl, of Brookhaven, Miss., is about to erect a brick plant at Houston, Texas. The proposition is up to the Houston Board of Trade, to furnish a suitable site.

Scott B. Walters, of Chambersburgh, Pa., has put in new brickmaking machinery and brought the capacity of his plant up to a daily output of 50,000.

The Bissett Brick Company of South River, N. J., has built two new kilns and made other improvements that have reduced its cost and increased its output.

R. T. Greenlee, a brick manufacturer of Belleplain, N. J., operates a small yard and has helped considerably in the building up of the Cape May district.

A petition in bankruptcy has been filed in the U. S. district court at Toledo, by the Payden Brothers Brick & Tile Works, of Lindsey, Ohio. The liabilities are given as $6,357 and the assets as $5,426.

The United States Sewer Pipe Company of Johnetta, Pa., is turning its plant over to the manufacture of common brick, and increasing the capacity from 80,000 to 100,000 a day.

J. H. Bennett, of Pittsburgh, Pa., has taken over the plant and business of the Mars Brick & Tile Company, at Mars, Pa., which is a small town suburban to Pittsburgh. Additional machinery is to be installed, the capacity increased and the general business expanded.

Seven hundred thousand red brick are under fire at the Schroeder Brick & Lime Company's plant at Shakopee, Minn. The shipments for the season have been very satisfactory and the prices obtained have met with the approval of the management.

Six million common brick will be required to build the plant of the Ohio Pipe Line Company at Irondale, Ohio. The main building will be 215 by 118 ft. and will be two stories high. It is estimated that eight or nine months will be required to complete the work.

The Federal Betterment Company, operating a brick plant north of Cherryvale, Kansas, shut down its works the early part of September on account of the failure of the water supply. Kansas has long been known as a "dry" state, but that fact has not, up to this time, seriously affected the Kansas clayworker.

The Farr Brick Company, of Cleveland, Ohio, is preparing to increase its capacity. Plans for the additional plant are being made by the Forest City Engineering Company of Cleveland, and at least part of the machinery will be made by the Bartlett Snow Company. The new machine room will be 60 ft. sq. and four dryer rooms will be added. Kiln sheds will also be built.

A new record was established at the Herscher, Ill., plant of the Illinois Brick Company when, one day early in September, it made 300,000 brick in eight hours. This is the largest number ever turned out in one day at this plant. the former record being 298,000. The brick were handled by seventeen men, or an average of 19,650 per man in eight hours, or forty-one brick per minute.

After a thorough investigation of the management and affairs of the Woodland Clay Company, G. M. Greenabaum, an investment broker and abstrator, with offices in the McCormick Building, Chicago, Ill., has taken over the unsold portion of the company's issue of $50,000 of first mortgage gold bonds, and is offering them for sale at par and accrued interest. The purpose of the issue is to provide funds for the construction of kilns and for other improvements, completed and to be installed, to increase the volume of the company's business to $100,000 per annum. John W. Anderson, Jr., is president of the company, which is primarily a Watseka, Ill., corporation, all but one of the directors being residents of that place.

Sewer Pipe & Drain Tile

A prominent sewer pipe manufacturer, talking about the competition of cement in sewer construction, expressed a great truth recently when he said that, so far as the smaller sizes went, the cement companies themselves were beginning to "back away" from the business, realizing that the thin walls would not give satisfaction, even though the material were mixed with the utmost care. They also were sufficiently far-seeing to understand that the poor service cement pipe gave the public would be reflected in a growing popular disapproval of cement, and cost the manufacturers dearly in the long run. "It is not the cement manufacturers we have to contend with," he said, "but the small promoter of cement pipe and tile making machinery. He comes into a town, and by pointing out how cheaply and how quickly his machine will make pipe and tile, wins over enough local capital to start a plant and buy his machinery. A part of his plan consists, generally, in giving a block of stock to some alderman or supervisor, or selling it to him in a way that practically amounts to a gift. Later, when the question of sewers comes up in that town, aldermanic courtesy is all on the side of the cement pipe proposition, and it takes a mass meeting of the citizens to secure even a fair hearing for burned clay. The expense of campaigns of this kind must be borne by the man who makes burned clay pipe. In the long run, if he gets the contract, the preliminary expense has made the work unprofitable, so far as immediate monetary results are concerned. Even at that, the idle machinery and the capital that is tied up in it, form a constant menace, and at the next sewer letting the same process must be gone over again. Meanwhile, the machinery man has pocketed his profit and left a harvest of expense in his wake. The only way that he can be circumvented is by watching the formation of these small companies, and, through a well-planned literature, to do everything that can be done to prevent the investment of local capital in an enterprise that must fatten on the public purse and deal in what is known to be practically useless for the purpose to which it is dedicated, or be a loss to every man who puts his money into it."

Under the competent management of Fred Owesney, of Steubenville, O., the business of the East Ohio Sewer Pipe Co., at Irondale, O., is increasing rapidly. In fact, the company has found it necessary to increase its production, and with this end in view the capacity will be about doubled. A tin mill that was formerly located at Irondale and which suspended operations some years ago, has been in the market for some time. This site has been obtained, and the East Ohio company is erecting a new plant thereon. Construction work is progressing under most favorable circumstances.

Having closed the most prosperous year in its existence, and declared a dividend of 10 per cent on its capital stock, the Dennison (Ohio) Sewer Pipe Co. re-elected Theodore Lanning, president; M. Moody, vice-president; Roy Lanning, secretary; E. D. Moody, treasurer; and P. A. Romig, manager. Two new kilns will be built and the plant will be otherwise enlarged.

J. H. Cahill, of Louisville, Ky., who secured the contract for straightening the bed of the Beargrass Creek, will shortly make arrangements for the purchase of a large quantity of vitrified pipe, to be used in connection with this work.

Pottery

It is just possible that there will be a joint conference between the Labor Committee of the United States Potters' Association and the Conference Committee of the National Brotherhood of Operative Potters ere the month ends, although just at this time no date for a meeting has been announced. One manufacturer has reported that the present wage scale will continue in effect until January 1. An agreement has been reached whereby the present or old wage agreement, which expired Oct. 1, will remain in force, and work continue as usual until Nov. 1, but if there is no general wage conference before Nov. 1, it is quite difficult to even presume what will follow.

R. H. Buchanan, of Pittsburgh has been elected secretary of the Harry R. Wyllie China Company of Huntington, W. Va. He was formerly in business in East Liverpool, Ohio, his father being one of the first operative potters here.

Bidding for help in the East Liverpool, Ohio, district among the pottery manufacturers has become a problem that many look upon as serious. Sagger makers quit work in one shop to go to another for an increase of even 25 cents a day, which brings the wage rate above the union scale. Clay hands have been doing the same, telling their employers that they intend to leave the city. It has been pointed out that this system should be stopped, as part of the joint wage agreement provides that the manufacturers and workers give each other two weeks' written notice before laying off on one side or leaving on the other, but it appears that the workers consider this clause as a dead letter.

Cincinnati, Ohio, manufacturers plan to maintain a permanent exhibit of pottery in that city, and with this end in view have asked the United States Potters' Association to select specimens and forward them to Cincinnati, where the exhibit will be permanently maintained. Everything in the pottery line is desired, including sanitary ware, table ware and cooking ware. The exhibit will be the only one of its kind in the country, outside of that at Washington, D. C.

The business outlook in the sanitary pottery trade is exceptionally good. The sanitary pottery manufacturers are not alarmed nor are they likely to suffer as a result of the present tariff legislation. Although the sanitary business just now is experiencing a bit of a lull, the trade as a whole is in good condition.

At Evansville, Ind., however, the sanitary potteries there are reported to be working but four days a week. In the East Liverpool, Ohio, district, one domestic plant which went into sanitary ware this season has stopped making for the time being, and another shop there is only working part time.

In the West, however, the sanitary business appears to be working on a better scale than in the East. At Richmond, Cal., the Western States Pottery Company had a temporary suspension of work, but a shortage of materials was responsible for this condition. It is declared that this California pottery has a host of orders on file for Pacific Coast delivery, and that the shop will be worked steadily throughout the balance of the year.

William I. Pullen, J. G. Gaze and John Connolly, of Trenton, N. J., who operate a porcelain manufacturing plant, at that place, may remove their works to Lambertville, N. J. The Chamber of Commerce of Lambertville has been asked for a bonus of $10,000. The company has been making a feature of the manufacture of electric porcelain spark plugs for gas engines.

B. Griffen Miller, of Mt. Holly, Pa., has built a pottery plant at Newark, Del., which will use 50 to 100 tons of clay a day. Mr. Ullman of Wilmington, Del., is one of the head men concerned. A yellowish clay is used which burns white, and, unlike some plants that have a great loss of clay in putting it through the crusher to eliminate the sand, they have little or no loss from this cause. George Miller has charge of the plant.

The Fulper Pottery Co. of Flemington, N. J., had on exhibit at the Astor House, New York City, a beautiful line of reading lamps, vases, bowls, crystalline glaze ware, ink wells, tile, etc., as well as a new line of chandeliers, solariums, domes and indirect lightings, all made of pottery and glass. An Egyptian panel was shown in green and black with hieroglyphics.

Floor and Wall Tile

A good suggestion is made by a contributor to the "Mantel, Tile and Grate Monthly," regarding prices and concludes with

"Why not try to furnish tile where marble is used almost exclusively? Marble work, even plain common marble work, is still higher in price than the best of tile work, and marble work has increased in price while tile has steadily fallen. Tile work of a decorative architectural character is far superior, artistically and technically, to marble. We all know this, but it seems we lack the faculties to make others see this point. It seems that the architects, as a rule, look upon tile simply as a sanitary commodity. Whenever they show any ambition for ornamental tile work they claim that they cannot get what they are after. They say that the designs offered them are mediocre and unarchitectural, so that they confine themselves, with few exceptions, to the specification of tile for rooms of a sanitary character only. Some few dealers, and a few small manufacturers endeavor to advance their work, and it must be said that their work progresses right along, although their means are limited.

"Why can't our industry shake off its lethargy? To accept, without a murmur, what the architect happens to specify is not sufficient. If a man estimates a job of ordinary tile work he is sure that perhaps every other dealer in his district figures on the same job, and that the lowest man will get the job, no matter how poor his reputation. If he would do some missionary work, and introduce new things, find new applications, present new schemes to the architect, he would soon find that his reputation grows, and that his work will command a better remuneration.

"If, on the other hand, the tile manufacturers would spend for the development of higher class work a very small amount of the money they constantly lose in their one sided economic struggle, they would soon find themselves in a better position."

This strikes the right note—do not spend so much time trying to put *your tile in and the other fellow's tile out;* he is spending just as much time and maybe as much money, trying to put his tile in and keep yours out. Put aside a part of that sum you now spend to decrease the amount of business some other tile man is getting, to increase the amount of tile used, displacing other materials that are not as good as tile, yet cost, in many instances, more money. If there isn't enough business for everybody, it is because everybody is working for more than his share of what business there is—use some of that energy taking business away from some one other than a fellow tile maker.

At Zanesville, Ohio, the Zanesville Tile & Decorating Company has been formed and business has been started under the management of Stephen Mills. The new firm has opened general offices in the Schultz block in Zanesville, where they will feature decorated tile.

More than 400,000 pieces of floor tile will be used in the new Pittock Block and the Northwestern Bank building, at Portland, Oregon. The contracts have both been secured by the Columbia Brick Works, of Portland.

Rebuilding at Grafton, W. Va.

At Grafton, W. Va., the task has been started of cleaning the debris and rebuilding the plant of the Thornton Fire Brick Company, which was partially destroyed by fire several months ago. Improved machinery is to be installed in the new plant, and with a view of obtaining information about the operation of other plants, general manager D. L. Potter and superintendent P. S. McCann have left for Cincinnati and St. Louis, where they will inspect modern plants in those localities. It is believed that the rebuilt Thornton plant will be ready for operation some time in October.

Architectural Terra Cotta

When the National Terra Cotta Company postponed its June quarterly meeting until September (the place of meeting being Denver, Colo.), it did not take into consideration the allurements of the month and the place. Otherwise it might have chosen a spot or a time when Pike's Peak would not be clothed in Autumnal glory and —all that sort of thing. "The meeting was just one great little vacation" said Secretary W. D. Gates, with that contagious smile. "We held two short executive meetings and laid out the plan for the text book—and then we went sight-seeing." "You did not elect officers, or anything like that?" asked a "Brick & Clay Record" representative. "No," said Mr. Gates, "our annual meeting will be held in January, here in Chicago. This Denver meeting was simply a postponed quarterly meeting, and very little was done." Mr. Gates said that the text book would be elaborate, and is being prepared by a committee, of which Mr. Olsen of the South Amboy (N. J.) Terra Cotta Company is chairman. The other companies are sending in details and designs that are being worked out to a uniform scale by draughtsmen acting under Mr. Olsen's direction. The society is endeavoring to reach a point where some uniformity of specifications for terra cotta work can be instituted, and something practically uniform in the form of bids that are submitted. The difficulty seems to lie in the difference in opinions and customs that are in vogue in the East and West. The basic difference lies in the fact that in the West, terra cotta has been, for the most part, set by the manufacturer, whereas in the East, the work is done by sub-contractors. The Western manufacturers point to the strong position of terra cotta in Chicago and other Middle West cities and claim that it is due to the position taken by the manufacturers in the Middle West having followed their work through and given, as a consequence, a series of monumental works to the credit of terra cotta architecture. The Eastern practice has not made for such perfect work, the tendency being to give a cheaper job, but one in which imperfections could be charged to either the manufacturer or the sub-contractor, according to who told the story.

Advertising "stock terra-cotta" and stating that it is not designed by ancient Greeks and Romans, but made with real architectural beauty to correspond with modern thought in house building, the Midland Terra Company, of Chicago, Ill., publishes plates showing details of store front construction, cornices and brick washes, pilaster caps and ornamental band courses that are ready for shipment or delivery at a moment's notice. This material is immeasurably better than carved stone, as it not only keeps clean itself, but does not send a white wash down the face of the brickwork. In addition to this, the fact that it can be secured without delay, makes it an attractive proposition for the builder.

Terra Cotta Skyscrapers in San Francisco.

The new 20-story Hobart building in San Francisco is to be of brick and terra-cotta. Local houses are now figuring the plans and it is thought that the contract will be let soon.

N. Clark & Son of San Francisco have been awarded the contract for the terra-cotta and brick work for the Young Men's Institute building in San Francisco. Matt glazed polychrome terra-cotta will be used.

The Letter Box

The following letter, from J. C. Corbin, 418 Penn St., Huntingdon, Pa., may be of some assistance to our readers; the offer that Mr. Corbin makes is a generous one, and Mr. Corbin's experience is such that any suggestion he may make is entitled to every consideration.

> I have read, with great interest, Mr. Williams' article "Boiler Scale and its Removal," which appeared in a recent issue of "Brick & Clay Record." I have had a large experience along this line, and agree with Mr. Williams that the only way to remove scale from a boiler and not injure the boiler, valves, packing, etc., is by a mechanical process. For the benefit of your readers I wish to advise that if any of them will write me personally to 418 Penn Street, Huntingdon, Pa., I will be very glad to advise them how they can remove scale by a mechanical process, at very low cost. This information I am willing to give, free of charge and without any obligation on their part. I hope to hear from many, as it will mean dollars and cents to every man that has to solve the problem of boiler scale.

"Brick & Clay Record" wishes to call attention to the spirit of this letter. It breathes the "new competition" thought, the co-operative spirit that is lifting the clay-working industry out of the old ruts and placing it where it belongs of right—at the head of the country's industries.

The cement manufacturers and the concrete machinery makers are now beginning to turn their attention to the brick makers of the Nation. Until now they were contented with getting the buying and building public interested in their product.

Carl F. Kneisel, secretary of the Sheridan Press Brick and Tile Co., of Sheridan, Wyo., writes:

Enclosed herewith find a letter which speaks for itself. I thought it might be of interest to you. It reads:

> Enclosed is a description of a concrete products plant that will be of interest to you. This is so important that we understand the clay brick interests did all they could to get the specifications changed from concrete blocks to brick. The clay products people are beginning to take notice of the concrete competition. They are holding annual shows similar to the cement products shows, and are exhibiting other signs of jealousy and distress. This will do them no good, however, as concrete is here to stay, and will soon be the universal building material, when a well equipped cement products plant will be as good or better investment than a brick plant, lumber yard or planing mill. This is as certain as that day follows night, and those who have the best equipped plants and turn out the best products are sure to reap the reward of their foresight and enterprise.

Enclosed with the letter is a circular which tells how one of the owners of the So-and-So Concrete Mixers obtained the contract to build "the largest seed and nursery company's new buildings" just because he had one of the mixers. This successful bid was declared a great victory for concrete because the "Brick interests did all they could to get the specifications changed from concrete block to brick."

The circular then describes the model concrete plant that got the contract and closes by asking the brick maker if he does not think it advisable to quit making clay brick and get into the game of bamboozling the people with a material that he—the concrete machinery man—knows will not stand.

The brick makers of the Nation may not have as much hustle to them as the cement fellows, but they certainly have more honesty in purpose when they turn out burned clay products and it is doubtful if many conversions can be made by such methods as are displayed by the concern mentioned.

Freight Tariffs

In many clayworking plants, there is a custom of giving railroad employes and switching crews, "slight tokens of esteem and good fellowship" in the way of turkeys at Thanksgiving or boxes of cigars at Christmas. It is only necessary to point to the fact that similar presents are not given to the employes of the plant itself, to bring to light the fact that these "remembrances" are not given in the holiday spirit, but as acknowledgements of past favors and to insure the continuance of the same. "He can accommodate us in many ways," is the underlying idea of the gift. Recent investigations that have come to light in the Interstate Commerce Commission have led to a closer watching of this practice, which, while harmless on its face, is very apt to lead to abuse. *When a railroad employe accommodates or favors you, he does so at the expense of some other shipper, or at the expense of the company that employs him.* In order to reduce its operating expenses, the railroad sets certain hours for switching, certain proportional parts or shares of the car supply, certain circumscribed duties and certain lines of conduct, for the government of its employes and the movement of its rolling stock. If these lines are carried out impartially by the employes, you receive what the company considers your fair share of attention, and, in case it does not seem fair to you, you have redress in the Interstate Commerce Court. Since the railroad is apt to "get after" an employe that does not abide by these set rules, *particularly when by so doing, he increases the operating expense,* he is much more apt to mulct some other shipper, in giving you those extra cars, or that "special movement" of your freight, than to give you really expert service at the company's expense. This may seem all right to you, while you are the favored party, but how do you know that the man who puts a green or yellow back in the box of cigars he sends down to the freight house the day before Christmas, won't get the advantage, in some time of trouble, such as car shortage, or conjestion of some transfer point? And so on, indefinitely.

Rather than run the risk of being hauled up on the carpet on a charge of bribery, and having to explain your position lamely—saying you did not hope for any return and all that sort of thing—it is better to give the turkeys and smokes to the men who are building up your business, and who can, through a little extra pressure, do something else to increase your profits. At the same time, build up a strong case for yourself with the railroad, by endeavoring to load every car to its full marked capacity, loading it quickly, and not taking the full 48 hours allowed you by law and custom. Keep a record of what you do in this regard, and when a threatened car shortage impends, submit your proofs to the men who can and who do control the allotments. Any preferment given you then will be given legally, on the ground of your being able and willing to use the equipment to its fullest advantage. The doing of that, day by day, will net you bigger gains in the way of "accommodations" and "favors" than innumerable boxes of Reina Victorias and whole carloads of the national Thanksgiving bird.

Changes in freight rates, which have been published since our last issue, all of which are effective on or before October 21 (unless otherwise noted), are as follows:

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From Lorillard, N. J., brick and fireproofing, to Suffern, N. Y., $1.50 per ton.

From Southern Points.

From Richlands, Va., common brick, to High Point, N. C., $4.10 per M. brick.

From Middle West Points.

From Auburn, Iowa, brick, to Omaha, Neb., 6c per cwt.

From Boone, Des Moines and Mason City, Iowa, brick, (except bath or enameled), and articles taking same rates, to Menasha, Wis., 8c per cwt., to Menominee, Wis., 12c per cwt.; to Merrill, Wis., 8c per cwt.; to Watertown, Wis., 8c per cwt. *Effective Nov. 1st.*

From Campus, Ill., brick and articles taking same rates, to Chicago, Ill., 3¼c per cwt.

From Danville, Ill., brick and articles taking same rates to Effingham, Ill., 4c per cwt.

From Edwardsville, Ill., brick and articles taking same rates, to Assumption, Ill., 4½c per cwt.

From Hamilton, Ill., Drain tile, to Keokuk, Ia., 3c per cwt.

From Murphysboro, Ill., paving brick and paving block, to Jonesboro, Ark., 11c per cwt. *Effective Oct. 23d.*

From Springfield, Ill., brick and articles taking same rates, to Effingham, Ill., 5¼c per cwt.

From Streator, Ill., brick and articles taking same rates, to Effingham, Ill., 6½c per cwt.

From Western Points.

From Boone, Des Moines and Mason City, Iowa, drain tile, to Menasha, Wis., 9c per cwt.; to Menominee, Wis., 13c per cwt.; to Merrill and Watertown, Wis., 9c per cwt. *Effective Nov. 1st.*

From Chaska, Minn., brick, to Winnipeg, Man., 17½c per cwt. *Effective Nov. 1st.*

From Clyburn, B. C., brick, common, pressed or fire, and fire clay, to Anacortes, Wash., 11½c per cwt. *Effective Nov. 1st.*

From Coffeyville, Kas., brick, except bath, fire or enameled; and excepting fire clay, tank or furnace blocks, to Enid and Lawton, Okla., 8c per cwt.; to Sulphur, Okla., 9¼c per cwt. *Effective Oct. 31st.*

From Hebron and Dickinson, N. D., brick (pressed), fire brick and fire clay to Kolin, Rossfork, Kingston and Stavely, Mont., 26c per cwt.; to Lewiston, Mont., 27c per cwt. *Effective Oct. 22d.*

From Moberly and Mexico, Mo., brick and articles taking same rates, to Kansas City, Mo., 5c per cwt.

From St. Louis, Mo., brick and articles taking same rates, to Joliet, Ill., 7c per cwt.

From St. Louis, Mo., brick and articles taking same rates, to Kansas City, Mo., 7½c per cwt.

From St. Paul, Minneapolis, Minnesota Transfer and rate points, brick, to Freeman, Iowa, 3c per cwt.; to Clear Lake Junc., Iowa, 6½c per cwt.; to Flint, Iowa, 7c per cwt.; to Charles City, Iowa, 8c per cwt.; to Sheffield, Iowa, 7c per cwt.; to Chapin, Iowa, 7½c per cwt.; to siding "A," Carney, Iowa, 8c per cwt. *Effective Oct. 26th.*

From Wilton, N. D., brick, to Winnipeg, Man., 15c per cwt.

Missouri Fire Clays.

In a bulletin issued by the Missouri Bureau of Geology and Mines, St. Louis is said to be the most important firebrick manufacturing centre of the country, and Missouri one of the chief producers of clay products. Probably no state in the Union has a greater variety of good clays, ranging in quality from the so-called "gumbo," burned for railroad ballast, to white kaolin, used in the manufacture of chinaware. Plastic fire clays are found in St. Louis and Northwest Missouri; flint clays in the south-central part of the state; potter's clay in Henry County; kaolin in Cape Girardeau and Bollinger counties; and common brick clays in most of the counties of the state.

Sand-Lime Brick

THE SAND LIME BRICK ASSOCIATION.

Headquarters, 211 Fillmore Avenue, Buffalo, N. Y.
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Vice-president, F. B. Allan, Toronto, Ont.
Secretary, W. E. Plummer, Jr., Buffalo N. Y.
Treasurer, John L. Jackson, Saginaw, Mich.

Executive Committee.

G. Silvester, Calgary, Alta.; E. G. Chapman, Minneapolis, Minn.; E. M. Burchfield, Rochester, N. Y.; H. H. Tifft, Tifton, Ga.; L. W. Penfield, Willoughby, Ohio.

Wright Brothers' factory, at Dayton, Ohio, where the first successful flying machines were made, and where the newest developments in aviation machines are being perfected, is built of sand-lime brick, manufactured by the Crume Brick Company. In the illustration published herewith, one of the biplanes is seen floating over the city that suffered so badly from the floods of last spring.

In addition to making a high grade face brick, by the sand and lime process, the Sacramento (Cal), Sandstone Brick Company carries a line of artificial sandstone, pressed into moulds for band courses, sills, lintels and quoins. This material is called "Artstone" and is made in light grey, buff, brown, slate and, where wanted, red. This "artstone" has the appearance of real stone, and is equal in quality to the best sand stone, standing a crushing strain of 3,000 to 6,000 lbs. and, as it can be cut like natural stone, it is extensively used on the Pacific Coast, for trimming purposes. This company's brick ranks with the best produced in this country, and many of Sacramento's finest buildings are faced with it. At the present time, nearly every building under construction in that city, which has of brick exterior, is using the Sacramento Sand Stone Brick Company's product in its facing. Among other work which this company has handled recently, are the following buildings: The First Methodist Church in Oakland, Cal., now building; St. Alban's apartments in San Francisco, Cal., recently finished; Highson Hotel, Modesto, Cal., a six-story structure, now building; Murray & Jones Mercantile Block at Modesto, Cal., recently completed; Quincy (Cal.) High School, now building; Travellers' Hotel, Sacramento, Cal., a seven-story building in course of construction; Sutter Hotel (seven stories) Sacramento, Cal., now building; Merrium apartments, Howe apartments, Shaw-Batcher building, Cadillac garage, Lauppe apartments and the five story building of the Sacramento Warehouse Company. In a recent issue of the Sacramento "Star" a description was given of a new 20-story skyscraper for which a permit had been asked. A part of the specifications are for Sacramento Sand Stone Brick, so it will be seen that this company is "in" on the big work, while taking good care of the smaller trade—the five and six story fellows.

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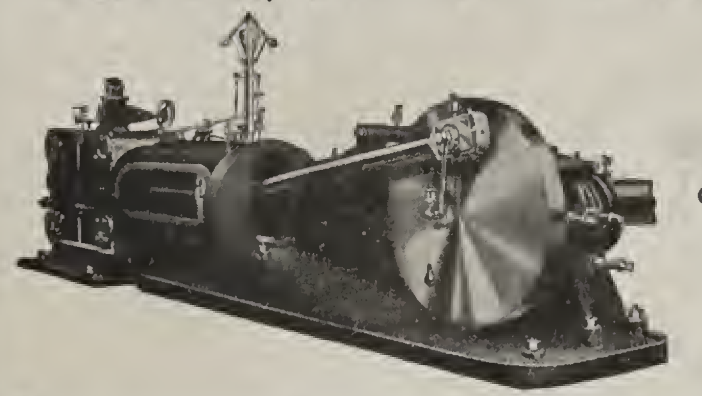

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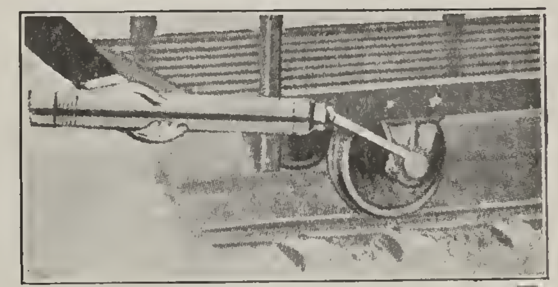

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Toco "Kiln Car" Grease will not melt or run off the journals of rack cars when used in the intense heat of dry kilns. Applied with special grease gun, which we furnish with barrel or half-barrel orders.

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As required for BRICK MAKERS USES.

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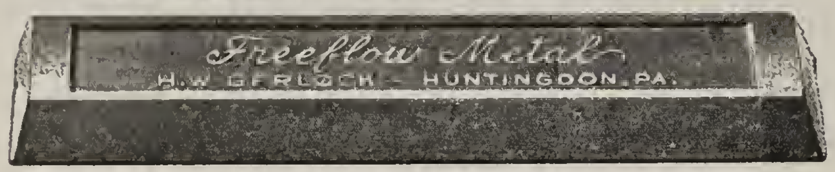

The Name
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itself implies something—but its use proves **more**. It is remarkably durable and its initially good qualities last through out, until it is worn down to the thinness of paper.

It is anti-friction, has practically no shrinkage and is a glutton for heavy pressure and high speed.

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To pay freight from Spokane
on a slip superior to what
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Trade Review

New York.

On November 1, the price of Hudson common brick will advance half a dollar. For the past week, dealers have been coming in with reservation orders, but this is not the sole cause of the advance. Stacking time is approaching and so is covering season, when manufacturers send large quantities of brick into this market, not for immediate sale, but for Winter requirements. This brick goes under cover to protect it from the elements and covering charges, wharf rent and interest on the manufacturer's money begin at once to pile up against its market price. Consequently a gradual rise is always expected some time in October, with another advance to follow when navigation actually closes, if not before.

As a general rule the October rise does not take place until the latter part of the month. That is because manufacturers seldom shut down their molding departments until after the middle of November. This year most of the molding departments were closed down in September, and it was expected that the advance would be correspondingly early. Prices today are $6.00 to $6.50 basic, with specials running to $7, where they are very stiff. Run-of-kilns sell for $5.50.

As for the demand, it is improving, but cannot be called uniformly active. Dealers who have been buying from hand to mouth for the last nine months seem to be following the same policy at this time, and are inclined to take a chance on higher spot prices rather than tie up large sums of money in stacks. From what can be learned the manufacturers anticipated this tendency early in the season, and they, too, decided not to tie up more money than seemed necessary.

This statement of conditions as they actually exist should not be interpreted as an indication of a basically unhealthy condition in the Eastern brick market. It is merely an indication of the conservatism that rules everywhere in the business world, and the brick situation is no worse nor any better than the dry goods, jewelry, railroad or other lines. In fact, although building construction here in New York has dropped off from 40 to 56 per cent, according to whether the city proper or the entire metropolitan district is included, building construction will be the first to recover when the tariff gets into working order and the currency bill has been passed, because building materials, and especially clay products, will be the least affected by the new impost law and real estate and building mortgages will be the safest type of security pending adjustment of finances. These two conditions should make for an early recovery in the demand for common brick. With a short output and a Spring renting season in New York as good as that of September and October, there certainly should be a rich harvest for the manufacturer who has a good run of brick to dispose of between March and July of next year, when the demand promises to be extremely heavy and the supply limited.

Face-brick, fireproofing, roofing tile and all clay products here in the East are in a market corresponding to that of common brick. There is a moderate volume of new business moving with a fair inquiry. Prices are held rather firmly, however, because of limited supplies. Sewer pipe, conduits and similar products are in much better demand than other clay products, and prices are actually stiff.

"I think we have reached the bottom of business depression," said John B. Rose, president of the Greater New York Brick Company, before he sailed for Europe on the first of the month. "We can count our reaction one full year from the first of October and in that time we have seen the volume of building construction in the metropolitan district shrink more than 50 per cent. The Fall renting season, however, exceeded last Spring's in volume of renting while Spring's sale movement was better than that of the Fall of 1912. I look for the Spring of 1914 to show a gain in renting as well as a complete turn over for the better in sales, because by that time we hope the currency bill will have been settled. While industries are trying to adjust their business affairs to new conditions, there is very likely to be a sharp slump in the stock market, and when that occurs investors flock to real estate, and building mortgages are the safest investment in times of doubt. If the mortgage market has plenty of money, building contsruction will go ahead on speculation if not on actual demand, and I believe that the Spring of 1914 will be a memorable one for the brickmakers."

H. D. Lounsbury, of the firm of Fredenburg, Lounsbury & Houghtaling, Inc., gave this view of the face-brick situation: "I firmly believe that we have reached the bottom of our retraction, and when the recovery does come I am convinced that there will be seen one of the biggest demands for face-brick that we have known in many years. People are getting educated to the advantage of the use of brick and since it has been shown conclusively that brick construction does not cost more than other types, the shrewd operator is going to play safe and put a little color and integral facade ornament into his building. The basis for my opinion is the fact that for seven years building investments have been restricted because of disturbing political business and legislative readjustment and now that currency, trusts and the tariff have been revamped, restricted and revised, business as a natural result will again seek its own level and building materials will be among the first to feel the benefits."

Kentucky.

Business among Louisville manufacturers of clay products during the past month, from brick to vitrified tile and pipe, has been only fairly active, although in the aggregate a good volume of work was handled by the trade. Large orders, however, have been exceedingly scarce. The Fall bids fair to follow the lead of the Summer in this respect, with very few jobs of any great size, and the confinement of orders to small quantities, residences and other small structures taking most of the material in the brick end, while small sewer work will help the call for pipe. There are no large jobs in prospect, and deliveries of brick are completed on the several large structures which have been under way during the Summer.

Contracts were let recently by the Louisville Board of Public Works for alley paving amounting to about ten blocks, vitrified brick being the material to be used. It is not yet known who will furnish the material. Some street work was to have been let for paving with the same material, but for some reason the Board changed the material to asphalt. It is understood that earlier bids on brick paving were unsatisfactory.

S. O. Snyder, of the Louisville Pottery Company, recently attended the Methodist Conference at Campbellsville, Ky., as one of the Louisville delegates. Mr. Snyder reports that the recent severe drought which prevailed through Kentucky has injured the trade in stoneware, such as jugs and jars, to a very considerable degree. Farmers are not putting up much kraut and vinegar this year, for the reason that they did not produce the necessary raw material. Up to July 15, according to Mr. Snyder, business was the best the company has ever handled, but it has fallen off steadily in the lines indicated ever since.

The Kentucky State Fair furnished another opportunity to Louisville clay men to display their products to large crowds. Rains interfered considerably with the attendance and with the enjoyment of those who did attend, but notwithstanding this, those who exhibited derived much benefit from the displays. The P. Bannon Sewer Pipe Company had a fine display of its products, including vitrified brick, sewer pipe, hollow building tile, terra cotta and the like. The Louisville Brick Company had a display of building and face brick and the Kentucky Vitrified Brick Company was another manufacturer with an attractive display.

The Louisville Brick Company is handling a fairly good business, including a number of relatively small orders, as well as a good deal of material for Parr's Rest and for the Louisville Railway Company, which is winding up the brick work on its big repair shops.

K. B. Grahn, president of the Louisville Fire Brick Company, stated recently that his company, like the rest, is running along nicely on a good grist of small orders, with very few big jobs to help swell the total. Business, on the whole, is very good with the company, however.

Owen Tyler, the Louisville dealer in building material, chiefly high-grade face brick, is doing the largest business in the history of his activities in this connection, although most of the orders are small ones, chiefly for residences.

The Coral Ridge Clay Products Company has been shipping goods steadily for the past six weeks, according to offi-

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Is a machine with a purpose. It is used not only for **efficiency** but for decided **economy**—saving you upwards of $500.00 a year in your clay plant. While it saves you real money it also permits a more uniform mixture of your material and therefore improves your product.

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is a very serious one with you, if your men go on strike—if they are continually laying off; if they leave you at the most critical moment. The key to the situation seems to be the use of labor-saving devices.

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We build steam shovels in all sizes from the smallest to the largest.

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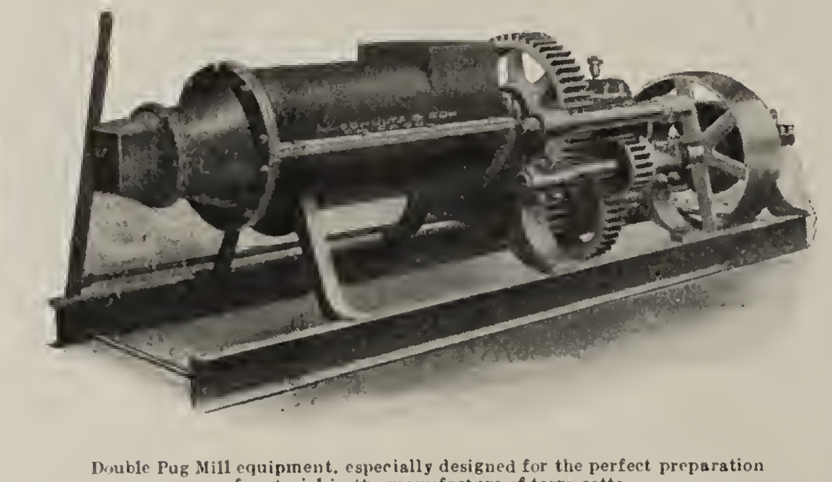

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suitable for all purposes. If you are having clutch trouble, write to us and we will show you the way out of your difficulties.

Complete brick plants furnished promptly, including auger machines, pug mills, clay cars and granulator shafts.

Cutting and cut steel gears always in stock for brick machines, also granulator knives.

Remember, we are brick works engineers and will be glad to advise you regarding any improvements or repairs which you contemplate.

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We also make a complete line of Power Transmission Appliances, Engines and Boilers.

cers of the company; and the company regards the prospects as being exceedingly favorable for a large Fall trade.

One of the nicest orders landed recently by R. B. Tyler, of Louisville, was for 50,000 of the Bradford Pressed Brick Company's brick.

W. J. Watkins & Company, of Louisville, landed the biggest order of the several which were let for the construction of Parr's Rest, an institution founded by the beneficence of a Louisville millionaire who died some time ago. The company will furnish for this building 100,000 face-brick made by the Columbus (Ohio) Brick & Terra Cotta Company. This is the largest single order for brick secured recently in Louisville.

Among the contracts recently let by the city buyer of Louisville, Ky., was that for the vitrified paving brick which will be needed during the year for repair work, G. W. Gosnell & Company, of Louisville, getting this contract at $16.25 a thousand as against a bid of $16.50 a thousand in 1912.

E. P. Denton, of Frankfort, Ky., is considering rebuilding his brick plant in that city, which was recently destroyed by fire.

Indianapolis, Ind.

The brick trade, like many other industries, has felt the effects of the financial depression in Indiana. Fall business is not opening up as well as it was thought it would, but a general resumption of activity is anticipated within the next few weeks. Bankers have been limiting credits and it also has been difficult to negotiate first mortgage loans for building purposes. As a result, a number of large building projects are being held in abeyance until the financial situation becomes easier. Brick prices are remaining steady, as brick men realize the present situation is only temporary.

Very much the same conditions confront the terra-cotta trade, although terra-cotta companies have some good contracts under way at this time. The drain-tile trade is fairly good outside of Indianapolis. Locally there has been little call for sewer pipe or tile this year. Prices are stiff and much better than they were a year ago.

After about two years, the Indianapolis Exhibit Company has closed its show room which was on the ground floor of the Hume-Mansur Bldg. Many brick, terra-cotta and building material companies had exhibits, but owing to the great value of the property, it was necessary to obtain higher exhibit fees than many exhibitors cared to pay.

The state of Indiana is well represented at the National Conservation exhibition being held in Knoxville, Tenn. The Indiana exhibit was arranged by Edward Barrett, state geologist, and includes specimen of limestone, sandstone, clays, shales and Indiana paving brick. Thirty Indiana manufacturers have taken space in this exposition.

All of the plant and property of the Wabash Brick Company at West Terre Haute is being offered for sale by the Terre Haute Trust Company, receiver for the concern. The Wabash Brick Company has had the only shale building brick plant in the vicinity of Terre Haute.

Columbus, Ohio.

Brick manufacturers in all parts of Ohio say that the trade is in good condition and the demand as good as can be expected for this time of the year. This is especially true of face-brick, which are moving as freely as the restricted car supply will permit. There is also a good demand for common brick in all sections. Paving blocks are moving well also while other clay products are active in every way.

One of the worst features the manufacturers of face-brick has to contend with is a shortage of labor. As the Winter approaches this trouble is expected to be more pronounced as the men will be attracted to the mines, because of the even temperature of the underground workings.

Building operations are still active in every part of the Buckeye State. The demand for brick is as strong as in former years and the indications are good for a continuation of the demand right up to the cold weather.

Brick interests in Columbus and vicinity are very much interested in the flood prevention plans for Columbus which were submitted recently by Expert Engineer Alvord. In all the engineer submitted ten different plans calling for an outlay of from $6,000,000 to $23,000,000. He most highly recommended plan No. 7, calling for an expenditure of $12,000,000 of which the share of the city would be $8,500,000. The remainder is on the county and the railroads. Mass meetings have been held to discuss the plans. John Conard, connected with the Conard Brick Company has stirred the people up with a plan of diverting the Scioto river around the city for future flood prevention.

With the filing of incorporation papers by the Alvada Clay Products Company, of Alvada, Ohio, with an authorized capital of $20,000, the consolidation of the tile business at Bettsville, Ohio, operated by George S. Flanders and another plant near Alvada has been effected. The concern will manufacture brick and tile. The incorporators are C. A. Schubert, George E. Schroth, J. L. Kin, George S. Flanders, Conrad W. Papenburg and E. L. Marks.

The contract for grading the right-of-way for a new railroad to be built by the Ohio River branch of the Pennsylvania from Cleveland to Canal Dover, Ohio, have been awarded. A number of brick and clay products plants will be located along the new line. The Dover Fire Brick Company is one of the concerns that will be benefited.

J. C. Shilling and J. M. Wick, receivers for the Yorkshire (Ohio) Tile & Brick Company, will offer for sale the plant of the concern at the court house at Greenville, Ohio, October 25. The property consists of a complete tile plant, including a concrete building, clayworking machinery and three kilns.

Texas.

Building activities in the different towns and cities of Texas and throughout the Southwest are greater at this time than they were last Fall, according to reports of contractors. Brick manufacturers are running their plants full time and their sales are unusually large. One of the notable features of the situation is the improved class of business buildings that is being erected. Tile and terra cotta are coming more and more in demand. Artistic judgment is exercised in selecting the ornamental and facing brick. Plans are being made for the erection of a number of large business blocks in San Antonio, Houston, Dallas, Fort Worth and El Paso during the coming winter.

The Southern Tile & Drainage Company, which has established a plant at Eagle Lake for the manufacture of tile and drain heads for use in the construction of the new vertical drainage systems, is doing a good business in the sale of the material. It is claimed that the new method of draining lands is specially well adapted to the Gulf coast region of Texas, where natural outlets for the surplus water are difficult to obtain. L. J. Edwards, who is interested in the company, was the inventor of the system.

The Brazos Tile & Brick Company has increased the capacity of its tile and brick plant at Rosenberg.

Philadelphia, Pa.

The demand for face and common brick has not been quite as strong as in former years, owing to the stringency of the money market and somewhat unsettled business conditions. Philadelphia is a large user of brick, however, under any circumstances, and even in times when a feeling of gloom has settled over the building world, it takes a large amount of burned clay products. The season is drawing to a close and, although a great deal may be done up to and through November, depending upon weather conditions, very little new work is being planned. Prices, however, have been maintained, so there is not so much to cry over as would be the case if lack of demand had made inroads on the profits of what was disposed of.

The Perkiomen Brick Company has a case in the courts against the Montello Brick Company, to recover a half year's rental of the plant and was given judgment.

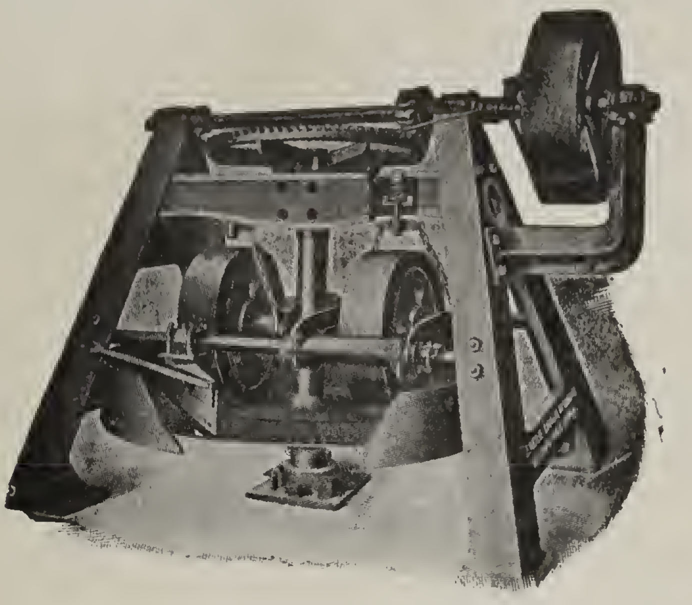
S. B. Dobbs has had a busy year, handling face brick and other building materials through his Philadelphia office as well as in Atlantic City, Baltimore and Washington. One of the larger contracts handled through his office was for 700,000 rough textured buff brick for the Adelphia Hotel.

The U. S. Sewer Pipe Company of White Rock, Pa., is getting out of the sewer pipe business and is turning its plant on to face brick, having a capacity of 60,000 a day.

Lewis Roseta of Philadelphia, Fred. Franks of Bath, Pa., and Groman Brothers of South Bethelhem, Pa., have purchased the Nazareth Brick Works, near Georgetown, Pa., and have overhauled the plant, which has a capacity of 30,000 face brick a day.

The Clearfield (Pa.) Brick Company, which recently suf-

The "Eagle" Dry Pan



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Chase Improved Flexible Bearing Folding Deck Dryer Car
See this car before placing your order.
We also manufacture a full line of Side Dump, Bottom Dump and General Purpose Cars, Transfer Cars, Turntables, Switches, etc.
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Solve the fuel problem and you have learned the secret of a profit-making plant. Don't stay in the rut—there is progress in all endeavors.

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Grateless Gravity Feed Fire Box

It is the solution of perfect combustion in your kiln. It means a saving of at least 25 per cent in coal tonnage and permits the use of a cheaper grade of fuel. Here is what one user says:

After using your grateless fire box for more than two years we thought perhaps a line from us as to how we like the box would be of interest to you. We burn all slack coal and can say your box has cut our tonnage about 25 per cent as well as permitting us to use the cheap grade of coal.

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We also find by being able to have absolute control of our heat and having all we want of it at any time without crowding, the quality of our ware is greatly improved.

You know we tried most everything on the market and were using the —— system when we installed your box, and will cheerfully recommend your box as the best thing on the market today and it will soon pay for the cost of installation.

HARVEY BRICK & TILE CO.
By T. J. Neiswanger,
Secretary.

You should at least investigate, and give us a chance to convince you of the benefits to be derived from this system. We will send descriptive pamphlet and full information on request.

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Vancouver: 175 Cordova St.

fered severe loss through fire, is being rebuilt and will soon be in operation.

The Egg Harbor (N. J.) Brick Manufacturing Company has run its plant to capacity all year and sold its output at satisfactory prices.

Philadelphia was one of the first cities to take up the use of rough faced face brick, being well advanced in brick lines before many other cities began using face brick intelligently. The earlier producers of this class of brick were all in Pennsylvania and looked to the Quaker City for a market, quite as much as to New York, which required considerable awakening before it would adopt the new thought in brickwork. Now all of the dealers in Philadelphia have full lines of the matte face material, and the sales are outnumbering those made on the smooth face varieties.

Four brick plants at Trenton, N. J., report a good season, the Trenton Red Front Brick Works, Donahue & Nolan, Applegate & Co. and Fell & Roberts all having run to capacity and shipped as rapidly as the kilns had cooled.

McEwen Brothers, owners of the New York & Philadelphia Brick Co. of Whippany, N. J., own a railroad which is used as a branch of the Erie. They have developed a large business at that point.

N. B. Kelly, secretary of the Chamber of Commerce of Phidelphia, has been fighting the threatened advance of freight rates that is wanted by the railroads. Local brick manufacturing interests are looking at the plan with favorable eyes, as it will assure them a larger proportion of the home demand.

Kansas City, Mo.

After a comparatively quiet summer, demand for brick in Kansas City is opening up in good shape. Several good-sized contracts already have been awarded, while others of the same caliber are in prospect. Plenty of residence work has kept brick men busy during the summer, and with a feeling of confidence evident in business circles, a satisfactory Fall trade is anticipated.

While demand for brick is holding up well, other conditions are not so satisfactory. The shortage in natural gas, used almost exclusively in Kansas, has proved a factor of importance, and one which, it seems, will put a number of plants out of commission. No less than twenty brick plants have closed down in the gas belt in Kansas, according to reports received in Kansas City. It appears that it is up to the brick manufacturers to either put in coal-burning apparatus or go out of business. Just what causes are back of the gas shortage are hard to say. Those in charge say that the gas is not available. While the brick men take the opposite view, there is no recourse and a score of brick manufacturing plants are waiting for better days. Two were equipped with coal-burning machinery and are running as usual. Two more are making the necessary changes as rapidly as possible and shortly will re-open with coal as fuel. It is said that about six plants are operating in the Kansas gas belt at present. The two which are making changes and which will join the coal-burning brigade in the near future are the Excelsior Brick Company, of Fredonia, and the Iola Brick Company, at Iola.

The Vale Brick Company, recently formed at Kansas City, Mo., is making satisfactory progress on its brick plant at Vale, Mo., a couple of miles from Kansas City, and will be ready to begin work early next spring. This plant, according to present plans, will have a daily capacity of about 100,000 common brick. The plant will have direct railroad connection, being on the main line of the Rock Island railroad. The company is capitalized at $75,000. George C. Stephens is president; Charles P. Bryant, vice-president; George V. Lewis, secretary-treasurer, and K. W. Klose, manager.

The Hydraulic Press Brick Company is operating but one plant in Kansas City at present, having dismantled one, and is putting another through the same process, while a fourth is lying idle. The plant in operation is turning out about 60,000 daily, and will be worked through the entire winter. The clay is being mined from a depth of close to 200 feet, and is, therefore, in no danger of freezing, regardless of the weather that will be served up during the next few months. The plants which have been abandoned all ran out of clay.

Among other important contracts recently taken by the Bryant Supply Company, of Kansas City, are the face-brick for the Lathrop building and for the Kansas City Southern building, both contracts calling for Ohio-made face-brick.

F. C. Lafountain, Kansas City manager of the Kansas Buff Brick & Manufacturing Company, is much in favor of an organization of face brick men and will make efforts to effect such a club during the coming winter. According to Mr. Lafountain, conditions in Kansas City have not been satisfactory during the past summer. Commissions are light, and agencies are not inclined to put forth their best efforts in some cases. The Hydraulic Press Brick Company is the only other manufacturer of face brick of any importance in Kansas City and it is thought that this big concern will be willing to come into such an association as Mr. Lafountain proposes. There are a number of face brick dealers in Kansas City who also are prospective members. Kansas City itself has been quiet, though much building is taking place in adjacent territory. Texas and Oklahoma have been heavy consumers of face brick during the summer, while Iowa and Nebraska also have contributed liberally. The company distributes in the immediate vicinity of Kansas City through the Coen Building Material Company, finding this method a highly satisfactory one. Mr. Lafountain also handles the output of the Denison Clay Company, the plant of which is located at Coffeyville, Kans.

The Main street plant of the Lyle Rock Company probably will resume work in the near future, despite the fact that the company has on hand a stock of about two million building brick. The Highland avenue plant has operated steadily throughout the summer with a daily capacity of about 40,000. The Main street kilns turn out the same number daily. Splendid weather has stimulated the trade in Kansas City, according to President Lyle, and demand has expanded steadily, the prospects being excellent for a good winter trade.

The Pacific Northwest.

Business conditions in Washington and Oregon continue good, despite the unsettled labor situation, due to the inducements offered by the Exposition builders and the faint rumblings of dissatisfaction in connection with the national policy on tariff and on foreign relations. Buildings are going ahead and plans are being filed with a certain feeling that if anything happens, they can be stopped before too large an amount is "tied up." Despite the feeling of hesitancy, however, these buildings are going ahead with creditable rapidity, and new holes are being dug, new foundations started, new iron work constructed, so that the atmosphere of wondering-what-will-happen-next seems likely to change, in the near future, to one of perfect confidence.

The Abrahamson Brick Company, of Seattle, Wash., reports business prosperous, and states that it is furnishing brick for the McBride Theatre building in Victoria, B. C., and for the Swift Canadian Meat Packing Company at the same place. These two orders call for one million brick. The Ford Automobile Company's plant at Seattle will take about 400,000, while a similar amount will be used in the completion of the post office at Olympia. The Tacoma (Wash.) Trading Company is taking 75,000 a week.

W. T. Houlahan, of the Builders Brick Company of Seattle, announces that his company has business ahead for eight months, some of the more important orders being the face and common brick for the L. C. Smith and the Elks' buildings and for the Normal School at Ellensburg, Wash. A two-million order for the Sisters' Hospital at North Yakima, Wash., has just been completed.

The Far West Clay Company, of Tacoma, Wash., manufacturers of hollow clay tile, reports orders for 15,000 tons in Vancouver, B. C., and 5,000 tons in Seattle. The contracting end of the business has been discontinued, as contractors have become so familiar with this material that they can figure it for themselves. A new six by eight and six by twelve Denison interlocking block is being made by this firm and is meeting with a favorable reception.

The Vernon (B. C.) Brick Company, which was organized early this year, is erecting a 60 by 30 ft. building and is installing machinery.

F. W. Eastman, formerly vice president and general manager of the Far West Clay Company of Tacoma, has resigned and is now connected with the Oregon Denison Block Company of Portland.

The Newberg brick and tile plant of Newberg, Oregon, has been sold to W. S. Wharton, president of the First National Bank of Newberg and a number of Portland parties.

The brick and terra cotta work on the Morgan-Bushing Building is nearing completion. The dark red colonial brick

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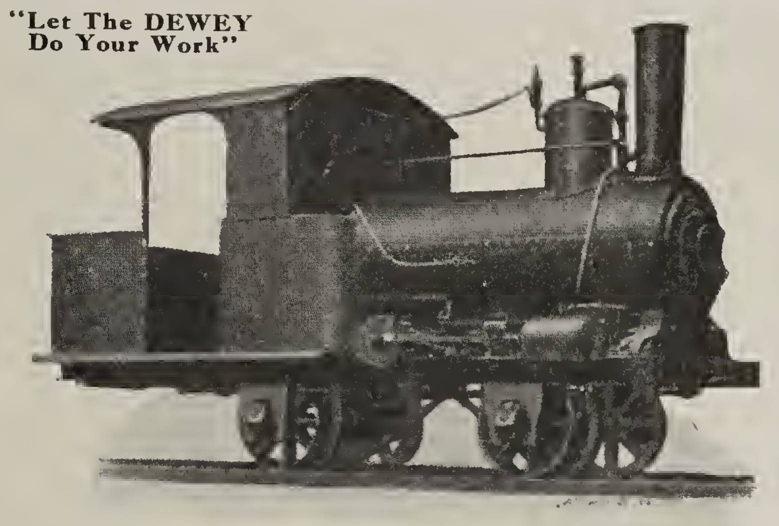

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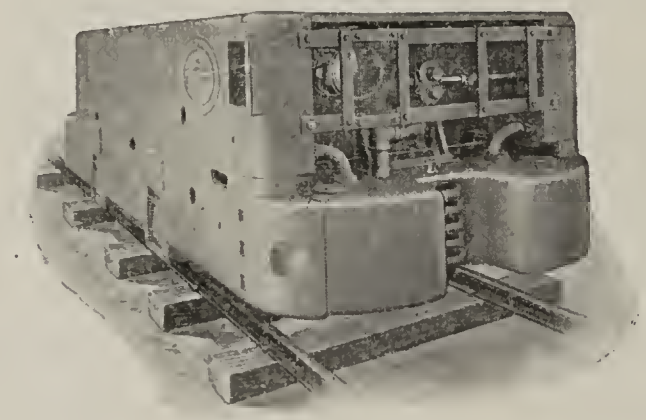

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used on this building were made by the Pacific Face Brick Company, which also furnished the brick that is being used on the Northwestern National Bank Building.

J. E. Walling, who has been in Marschfield since Spring trying to establish a brick plant, has some of his plans perfected, and in connection with George Welstead will erect a small dry-press plant at Summit. A deposit of shale has been found there, and the samples have proven satisfactory. The two partners expect to have the yard in operation by November 1. The company will be incorporated for $30,000 and will be known as the Coos Bay Brick & Clay Company. Mr. Walling expects to make high grade face brick and ship same by boat to Portland, which he thinks will be his biggest market.

The Monmouth brick yard has installed some new drying sheds and will thereby greatly enlarge its capacity.

The Bandon (Ore.) Clay Products Company, under the management of J. P. DeGesen, has been started up again, after a shutdown of nearly a year. The plant will make brick and a few drain tile.

The Tillamook brick and tile yard has been started by Krebs Bros. A full line of Fate machinery has been installed, and brick and drain tile will be made. The yard has excellent clay and the machinery has given full satisfaction.

The Oregon Agriculture College at Corvallis is installing some pottery machinery for the testing of clays. This work will be done in connection with the State Bureau of Mines. Prof. Parks, who has charge of this work, left on a trip to Baker County to investigate new stoneware potters' clay recently found there. As there is only one stoneware plant in this state, the discovery of some new stoneware claybeds will greatly help this industry.

The brickyard operated by the State Penitentiary at Salem has made nearly two million brick this season. Most of these brick will be used at the new buildings to be erected at the State College at Corvallis. The State Board of Control has raised the price of these brick from $5.00 to $7.50 per 1,000.

Minneapolis and St. Paul.

The market in common brick in the Northwest has been very lively, and dealers and manufacturers are being kept busy in filling late orders that were given with time limits. Crop conditions are in the main, responsible for deferred projects being started, and as the season is in its last stages so far as building is concerned, everyone is placing hurry-up orders and supplementing them with telephone and telegraphic instructions, emphasizing the need of prompt delivery. All dealers are looking for a good year in 1914 and there seems to be a revival of demand for brick and tile, the former for larger buildings and the latter for home construction with the fireproof feature. Work along the lines of educating the public in fire prevention, emanating from several sources, and the co-operation of the State Fire Marshal with the underwriters in fire protection, is bearing fruit, it would seem, in the increased demand for brick and tile house construction.

Among the larger buildings nearing completion in the Twin Cities is the St. Joseph's Novitiate, and three large churches in St. Paul, additions to the University of Minnesota and city and county hospitals in both cities, and outside of these cities a great number of public and semi-public buildings. In Western Canada an industrial boom seems to be getting under way, and several large factories and distributing warehouses are in course of construction and many others under serious consideration, with a likelihood that in the Spring there will be a large increase over any previous years in brick construction in this territory.

H. D. Chamberlain and R. H. Somers, of Chamberlain, S. D., are about to establish a large brickmaking plant at Fort George, B. C., which is located about 450 miles north of Vancouver and midway between Prince Rupert and Edmonton Railroads.

R. H. Waterston, of Minneapolis, will establish a brick, tile and culvert factory at International Falls, Minn. The first unit of the buildings will be built early in the Spring and cost $10,000 for buildings and machinery. They will begin with an output of 20,000 brick per day and make all kinds of pressed face brick.

Wilson & Lovejoy, who operate a brickmaking plant at Barnum, Minn., have an order from a Duluth building supply firm which warrants them running the plant all winter. An additional kiln, holding 65,000 brick will be erected at once to facilitate getting out the brick.

San Francisco, Cal.

A further improvement has taken place in San Francisco building conditions in the last month, and there is more activity than for some months past, with an apparent easing of money conditions which promises well for the future. Permits were issued in September for buildings valued at $2,273,723, compared with $1,783,145 for the same month of last year. Moreover, Exposition work is advancing more rapidly than before, and contracts are coming out on the new city hall, municipal auditorium, etc. Contracts are also being let on a number of large apartment and office buildings, in which brick and terra cotta will be extensively used.

Other California cities did not make so good a showing for the month, Los Angeles being far below recent records, while Oakland and San Diego both show a decrease. At Portland, Ore., however, work has been picking up for the last two·months, and the situation is much better than during the summer. Considerable permanent building is being done in interior towns, but with short crops it is uncertain whether this will continue.

The Steiger Terra Cotta & Pottery Company has taken the terra-cotta contract for the Physician's Building, a large job, at Powell and Sutter streets, San Francisco, which will take about 200 tons of standard terra-cotta. The Steiger company is making an elaborate exhibit at the California Land Show, now in progress.

The real estate and personal property of the old Antioch Pottery plant, at Antioch, Cal., which has for some time been held under mortgage by the Bank of Antioch, was put up for sale October 6 under foreclosure for $14,429.

The finishing touches are now being put on the brick pavement on First street, between Market and Mission, San Francisco, which really marks the beginning of brick paving in this city. One side of the street was finished about a month ago, and promises to stand up extremely well under the heavy teaming to which this street is subjected, being a vast improvement over the rough rock pavement which was there before.

The increase of interest in paving brick in this vicinity is indicated by the recent shipment of 400 tons of this material from Seattle, Wash., to Oakland, Cal. This brick, like that used in San Francisco, is made by the Denny-Renton Clay & Coal Company.

The Atlas Paving Brick Company, organized in San Francisco a few months ago, has been operating an old plant near Hunter's Point, and is making a successful start at the manufacture of pavers. Material is now being furnished on contract for runners beside the rails of the United Railroads.

The Oakland Paving Brick Company, of Decoto, Cal., has been succeeded by the California Brick Company, with C. E. Fuller in charge.

In view of the large contracts recently let, which will take the output of several plants for some months to come, the San Francisco market is in much better shape, and there is at least a fair prospect of better prices between now and the end of January. In some parts of the state, however, competition is very close, and especially in southern California, where there is very active competition from other materials. To offset this, the Long Beach Brick Company, of Long Beach, has reduced the price of common brick from $8.80 to $8, and made a similar cut in blue brick. The company has also gone into the masonry contracting business, and claims to put brick in the wall cheaper than in any other town of southern California.

Sewer work is less active in San Francisco than a few years ago, but there is still some work in progress. The street committee of the Supervisors has recommended the construction of the Visitacion Valley sewer at an estimated cost of $125,000.

The town of South Pasadena is holding a bond election to provide $200,000 for sewer construction.

Alabama.

From the number of brick buildings already in course of construction and the large number of permits issued for new buildings that will be of fireproof construction, it is evident that the demand for brick, both face and common, will continue for some time. Besides the large quantity required for work of considerable magnitude, there are numerous smaller buildings, from one to six stories in height that are being put up in the centres of smaller cities

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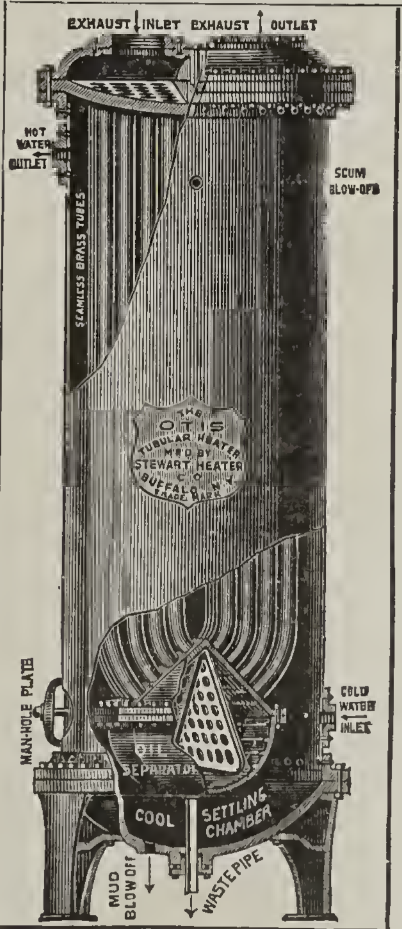

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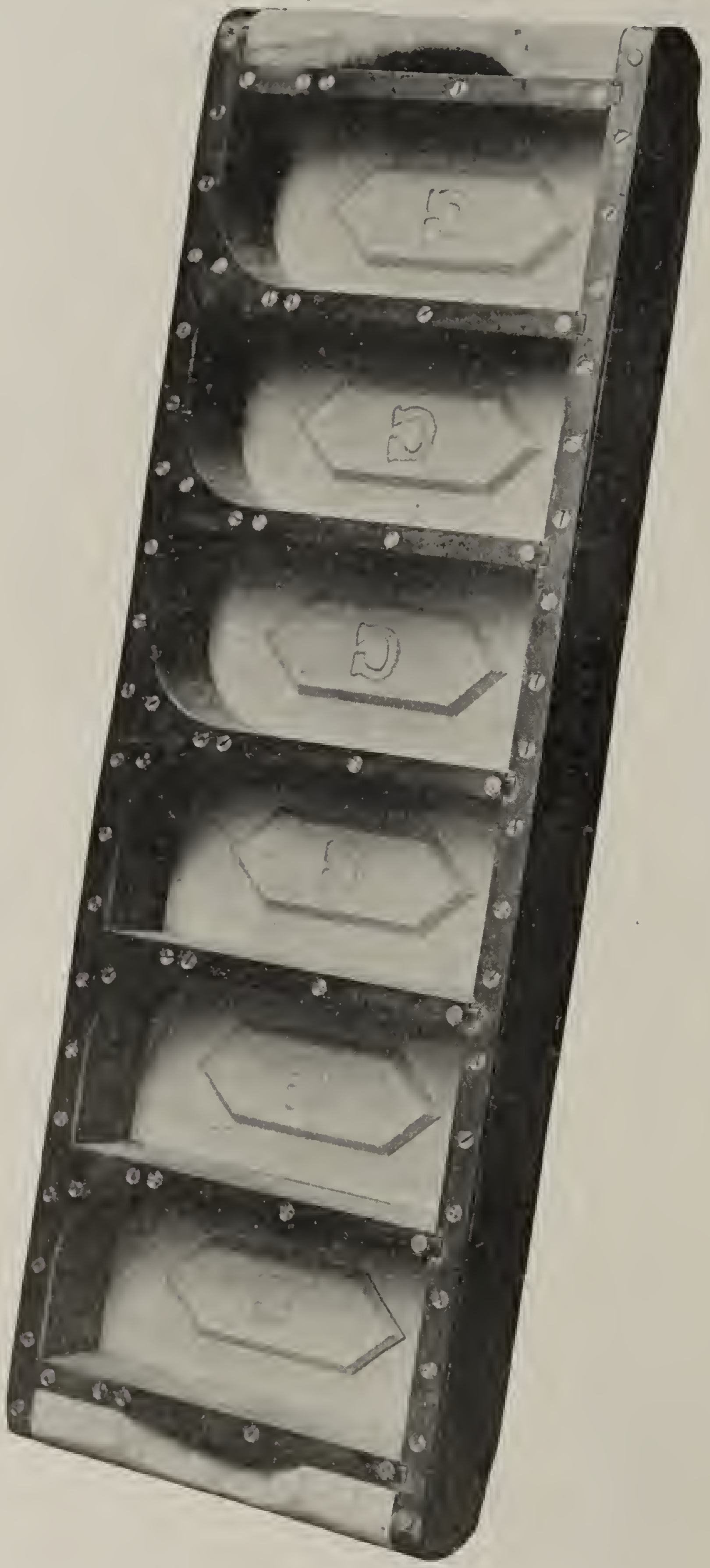

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that are now a part of Birmingham. Brick construction is under way in every direction, here a church, there a store building or a residence.

An involuntary petition in bankruptcy has been filed by the Sibley-Menge Company, one of the best known brick manufacturing concerns in the South. Mr. Sibley states that, owing to the increased demand for Sibley-Menge brick, the plant was increased in 1912 and that the financial stringency made it difficult to realize on the securities that it was necessary to float, to pay for the improvements. On the other hand, large orders, calling for immediate shipment of large quantities of finished material tied up more of the company's funds than had been anticipated, and trouble resulted. At present, more unfilled orders are on the company's books than at any time in its previous history and the demand for Sibley-Menge brick covers the entire South. The plant will continue to run and a plan is being formulated that will reorganize the company, and put it upon a sound financial basis. It is claimed that this company has furnished nearly ninety per cent of the face-brick used in Birmingham, but that it has a valuable asset in the established trade it enjoys in the larger southern cities. Edward Hiller has been appointed receiver and will take care of all unfilled orders, so that the reputation of the company may not suffer.

The brick plant at Sulligent has two kilns not yet opened, but the brick are all sold. Some will go to Birmingham to fill contracts on buildings now in course of construction and some will go to Dora, Ala., to be used in the building of a number of store and residence buildings that were formerly of frame, but which were destroyed by cyclone several months since.

Around Montgomery, brick trade is brisk. Dealers are doing a good business and the local plant is being kept busy, with a good demand for its product.

Georgia.

Dealers in brick and other fireproofing materials, in Macon and Columbus, Ga., report a heavy demand and good prices. While no large orders are being placed, the volume of small business is increasing rapidly, residence work particularly being planned for brick. A wave of prosperity seems to have swept the state and carried with it a desire for better housing than has been the custom in bygone years. An energetic campaign for "the brick house safe from fire" has borne fruit, and architects are recommending the safe and sane house to clients, irrespective of the amounts to be invested. Georgia is awakening to the possibility of building well, while cheaply, and the brick plants are reaping a harvest of orders from a class of building hitherto dedicated to the lumber interests.

ANOTHER HOUSE ORGAN.

Denison Tile Engineering Company Issues Attractive Monthly Called "The Interlocker."

Although a new-comer in the family of clayworking house-organs, "The Interlocker," published by the Denison Tile Engineering Company of Cleveland, Ohio, gives every promise of being a credit to the craft of house-organs and a "big business" getter for Denison tile. It has an attractive cover (which is half the battle) and, for the rest, is well edited, well printed, uses a good grade of paper and high class engravings. "Brick & Clay Record" is glad to be on its "Exchange List."

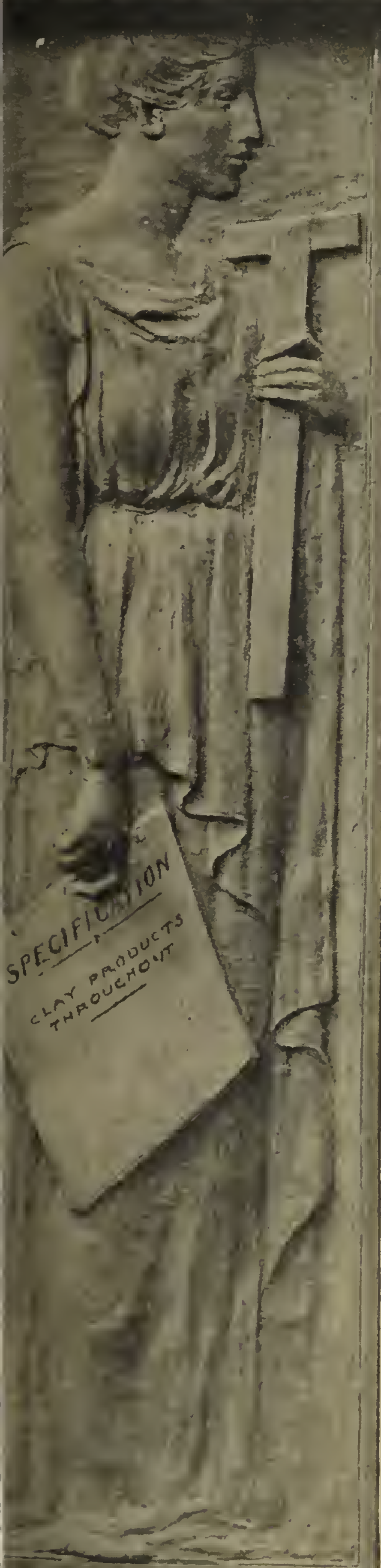
WILL MEET AT DES MOINES.

Iowa Clay Products Manufacturers' Association Will Hold Convention Dec. 10-12, at Des Moines, Iowa.

C. B. Platt, secretary of the Iowa Clay Products Manufacturers' Association announces the dates of the forthcoming annual convention and the city in which the convention will be held. The dates are Dec. 10th to 12th inclusive and Des Moines, Iowa, has been chosen as the best city in which to hold the meeting. An elaborate program is in preparation and it is expected that this convention will be the most important the association has ever held.

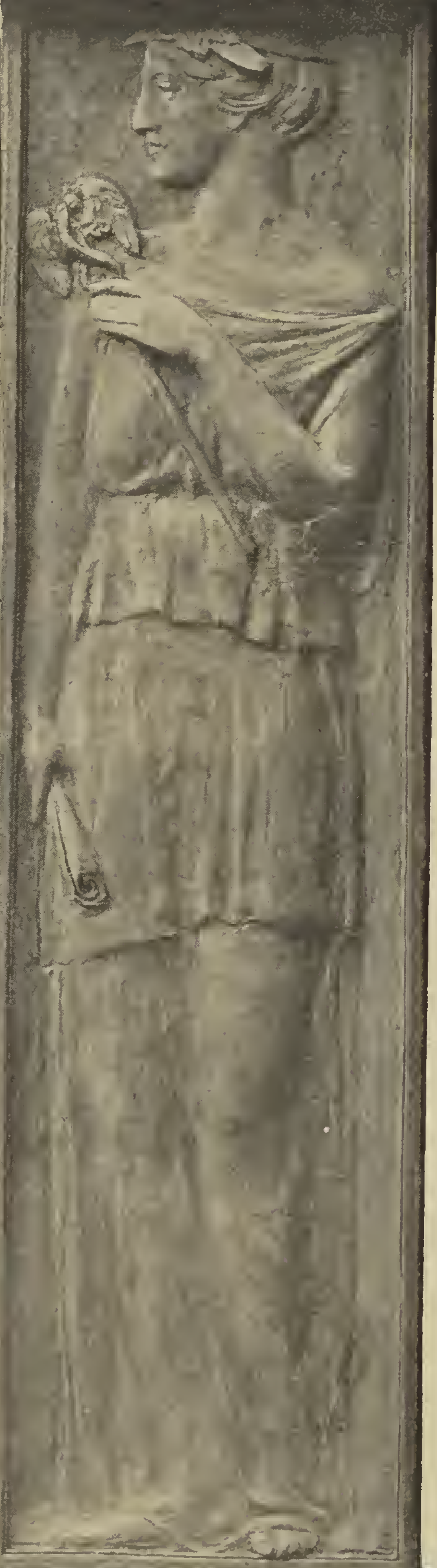
IN THIS NUMBER—THE FILIPINO AS A CLAYWORKER

BRICK and CLAY RECORD



GEORGE H. TEFFT

Secretary-Treasurer of the International Clay Products Bureau.



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CHICAGO, NOVEMBER 4, 1913

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The Editor's Corner

A Department Wherein is Set Apart Comment
and Opinions on Some of the Graver Problems
Confronting the Clayworker and Co-Laborers

COMPETITION is not the life of trade, contrary to the popular conception. Years ago the old saw may have applied to the conditions existing at that time, for business was isolated. Stores and factories were miles apart.

TODAY the times have changed. The old order has been reversed. The tradesman's motto likewise must be changed. It should read, "REGULATED competition is the life of trade."

UNFAIR competition hurts industry. It injures the factory man—it crimps the merchant—it curtails the profit of labor.

"The survival of the fittest," is another misused maxim.

Several thousand years ago, when a small thread separated man from the beast—when civilization was unborn—thousands of years ago when all life had to battle for existence, because one preyed on the other, it might have been that it was "The survival of the STRONGEST," but not the "Fittest."

But, today we have civilization, and we are still striving to fit the old saw to present conditions.

We are still striving to make ourselves believe that the "FITTEST" win out in the long run, but it is wrong, because it is the "STRONGEST" we refer to—the one with the most animal strength—with the most brutal force—the one that comes nearest to living and acting like the long-tusked mammoth and the saber-toothed jaguar that roamed the tangled jungles of the prehistoric period.

As a matter of fact the "Fittest" may be the WEAKEST in physical strength. He may be small of stature—he be lacking in all those attributes that tend to place him in the limelight of an admiring but mistaken populace.

Competition, therefore—the sort we refer to when we think of some merchant, or some manufacturer, who, because he is strong—because he has power, overrides his weaker competitor, and crushes him to the wall—competition like this, is ruinous to trade.

The world learns its lesson slowly. Civilization has not come in a night. Business, likewise, must pass through the various stages of development.

And, strange as it may seem, it is the "Little fellow"—the representative class, that usually leads the way.

This is true in the history of Nations—it is true in the history of people—of business and trade.

The first step toward liberty always is taken by the "Little fellow," in whatever field of endeavor we may cite.

A few years ago the laboring man—the "Little fellow" in the business of making a living—of eking out an existence, decided he was not getting a fair shake.

He discovered that he and his fellow workmen were competing with each other—that this unfair competition was keeping down his wages and keeping up his hours of employment.

"We must not compete against each other by offering to work for lower wages or longer hours," he said to himself.

Having incorporated this in a set of constitution and by-laws he set about to practice what he preached and the labor UNION or the labor TRUST, was formed and wages ARE KEPT UP and he DOES REGULATE LABOR COMPETITION.

Then, as the "Little fellow" grew in strength—that is in numbers, for in NUMBERS there is STRENGTH, he decided that if he could say HOW MUCH he should receive for his product—his labor, he also could determine how much of that product he should GIVE for the price he was to receive.

Today, he not only REGULATES THE PRICE but he also LIMITS THE AMOUNT OF WORK EACH MAN SHALL DO FOR THAT PRICE.

So much for co-operation—for unionism or trust combination of labor.

A few years ago another "Little fellow" in the great game of life—the farmer, took up the same problem. He felt the same way the laboring man did. He was not getting what he thought his product was WORTH.

The farmer wanted to REGULATE prices. He was the PRODUCER and, therefore, he believed he had the RIGHT to say what price he should get for what he had to sell.

"We must get together," he said, "and we must store our products and hold them until the buying public is WILLING to pay us OUR price."

The farmers DID GET TOGETHER and the American Society of Equity grew from that co-operative spirit.

Another one of the "Little fellows"—the physician, received the same inspiration and today every county has its medical society which says WHAT FEE SHALL BE CHARGED for a day visit and a night visit and HOW MUCH SHALL BE CHARGED for office consultation.

You see these "Little fellows" recognized the unsatisfactory results of UNFAIR competition and they have profited by the lesson.

They got away from the idea of trying to make themselves believe that ANY SORT of "Competition was the life of trade."

They realized that cut throat methods hurt not only the other fellow but also THEMSELVES and they reached an AGREEMENT whereby competition ceased.

The laboring man fixed a fair and reasonable scale of wages and made a contract with his employer to abide by that for a certain period, and BOTH were benefited thereby.

The farmer—especially the tobacco grower and the cotton grower, fixed a certain price for his product and entered into an AGREEMENT with the buyers to maintain those prices for a certain period and unfair competition ceased.

The physician decided on a certain fee to be charged and signed an agreement binding each member of the profession not to accept a patient for less than that amount and UNFAIR competition ceased.

Why not the manufacturer? Why not the merchant? Why not the entire business world—laboring man, professional man, merchant and manufacturer?

The Sherman law?

Yes, that IS a stumbling block. It is true the courts have interpreted this law in such a way that the laboring man and the farmer and the physician can form trusts and combinations, and escape its penalty, while it prohibits the manufacturer from enjoying the same privilege.

It is CLASS legislation, of course, and it is contrary to the spirit of the American constitution.

If the EMPLOYEE can enter into a TRUST agreement then it seems as if his employer might do the same thing, but the courts have ruled differently and until a different interpretation is given the Sherman act or a different enactment by Congress is passed covering this point, the manufacturer must struggle along under the yoke of class legislation and make the best of it.

There IS a way out of it, however. There IS a way in which the manufacturer may reach practically the SAME ends without bumping into the Sherman act, and the way is a BETTER way than the system in use by the laboring man, the farmer and the physician, because it is based on HONEST methods—because it has as its fundamental principle a FAITH IN MAN'S HONOR.

This way is the OPEN PRICE POLICY which has been discussed in these columns from time to time.

The Open Price Policy means that there is nothing UNDER COVER—that every business transaction is OPEN and ABOVE BOARD—that there will be no infraction of man-made laws—that there will be no infraction of the moral code.

The manufacturer and the storekeeper may not be able to form combinations and trusts just the same as the laboring man but the manufacturer should not WANT to, for TRUSTS, as they run, are UNFAIR and really throttle honest competition.

But the manufacturer ought to be able to REGULATE his prices—he should be in a position to say HOW much he shall receive, just the same as the laboring man and it should be accomplished LEGALLY.

The Open Price Policy grants him the LEGAL OPPORTUNITY.

There is News—

BUSINESS NEWS IN THE CLASSIFIED ADS. ARE YOU READING THIS NEWS EACH ISSUE?

THE next issue of "Brick and Clay Record" is going to be such a lively one, we cannot refrain from taking you into our confidence and telling you just what some of the good things will be. We want you to benefit by what is to be served you, and now give you fair warning not to let any excuse keep you from opening the Nov. 18 issue when it arrives and reading it from cover to cover.

To begin with, there is to be a number of good, practical features—articles by men who know HOW and WHY—and these will solve some of the REAL KNOTTY problems. For instance, Prof. Charles F. Binns, director of the New York State School of Clayworking, one of the ablest writers and most experienced ceramists in the country, re-appears as a contributor. Prof. Binns has been a very busy man the past year and despite several urgent invitations he has declined to write, giving as his excuse an unusually large number of ever-increasing duties in his school work.

Prof. Binns has surprised us, however, by voluntarily contributing an article on "Scumming." Accompanying the manuscript there is this notation: "I notice that the subject of 'Scum' has been ventilated quite a little in your correspondence lately and I thought, perhaps, an article on the subject would be timely."

Prof. Binns' article is entitled, "Scum on Brick and How to Remove It." It is worth many dollars to the clayworker who has been having trouble of this nature for it goes right down into the subject and gives the remedy.

W. A. Butler, the kiln and burner authority, who has given us such a valuable article in this current issue on the continuous tunnel kiln, appears again in the Nov. 18 issue with another equally as valuable and interesting article on the same subject, treating a different phase of the fuel problem. He makes the statement that the use of a cheaper grade of coal will CUT FUEL CONSUMPTION 75 PER CENT, and he proceeds to tell you WHY and HOW.

These two papers are not all that is to be given you on the manufacturing end of your plant, but they are enough to give you an idea how important the Nov. 18 issue is going to be.

Among the selling articles there is another by D. W. Fredericks, who takes up the subject of brick garages this time. We have had so many inquiries for pictures, floor plans and suggestions for garages we asked Mr. Fredericks if he would not help us out. He has done so and will give several pictures of modest but artistic brick garages, with the floor plans and the itemized cost for all the material and labor.

This article is one of a series we have been running of late to give you some real good selling arguments for burned clay. The recent articles on "Re-inforced Brick Walls," "Brick, the Ideal Factory Construction—a Comparison in Cost with Concrete," "The Silo and How to Make it Permanent," and all the others of a similar nature, covering a great variety of subjects, have proved valuable aids to our readers.

"What the School of Ceramics Has Done for the Filipinos," is the second installment of the article in this issue by Irwin C. Walker. It will prove a surprise to you. The contrast of the present day Filipino clayworker with the native you are told about in this issue, is decided.

These, as has been said, are only a few of the special features that will be in the Nov. 18 issue. There will be many more, but we do not want to spoil the good time that is in store for you by telling you too much in advance.

We might add that the several departments of the magazine will be up to the same high standard set by this current issue. Especial attention is called to the "Questions and Answers" and to "The Superintendent." These two departments are regular gold mines to the clayworker, for they fairly bristle with timely tips and suggestions. Our staff of experts solve many a knotty problem for you in these departments. Are you taking advantage of them?

If You Were Building a Smoke Stack—would you know how to begin? Would you know the proper size and what form of construction to use? In the Question and Answer Department of Nov. 18 a subscriber propounds the problem of a smoke stack and he is given some good advice. This is only one illustration of the great value this department is to our readers.

Are you taking advantage of this department? The service is free to you.

A Man with an Obsession

Being a Little Bit Personal About a Remarkable Fellow Who Thinks, Talks, Writes and Dreams Burned Clay Sewer Pipe Twenty-four Hours a Day

George H. Tefft

Secretary-Treasurer, International Clay Products Bureau

OBSESSION, according to Webster, is "The persistent and unescapable influence of an idea or emotion." In other words, a man who has a single idea which he persistently follows out, is said to be OBSESSED. The alienist, then comes forward, and declares that any man possessing an obsession is a fit subject for the insane asylum.

Either Webster is wrong or the alienist is laboring under a serious mistake, for no one would accuse George H. Tefft, the secretary of the International Clay Products Bureau, of being a suitable subject for an asylum, and yet he has an OBSESSION and it is a most PERSISTENT and UNESCAPABLE one, and he hangs to it with a tenacity that makes a Boston terrier look like a weakling.

Mr. Tefft's obsession is vitrified sewer pipe. He got the idea into his head some several years ago that burned clay was the ONLY material for sewage, and he has held to that idea without a waver ever since.

Starting out early in the morning he begins to THINK sewer pipe as he dresses and hurries through his morning meal. He talks vitrified sewer pipe to the first fellow he meets and when he is not talking it to someone he is writing about it. Then, when night comes he starts to thinking again and he closes his eyes in the slumber that is well-earned and begins to DREAM about it.

Someone might believe that this way of living in a single-purpose atmosphere must become monotonous both to Mr. Tefft and his friends, but not so. You see Mr. Tefft is a decidedly interesting person and he has so mastered his subject—vitrified sewer pipe, he can discourse on it all day and all night without boring either himself or his friends.

It is a good thing that George H. Tefft has this obsession—that is, it is good for the manufacturers of this product. Before he got this obsession vitrified sewer pipe had rather an uphill fight, especially out west. Then, too, the concrete maker came into the field and began to stir up things a little.

This obsession, however, worked the burned clay product back into popular favor, stopped the stampede to concrete and put the clayworkers in the West back on the map as contending forces for business supremacy.

Mr. Tefft conducts the publicity bureau which was organized by the sewer pipe manufacturers in the West and which now is national in its scope. When he gets time for anything else he utilizes the fleeting moments by managing the W. S. Dickey Clay Mfg. Co., which concern manufactures vitrified sewer pipe out in Kansas City.

Between these two jobs it may be surmised that he is a very busy man and he is, although he finds time to attend conventions and do other little things providing they give him the opportunity to discuss his pet hobby.

Mr. Tefft has been a great help to the manufacturers and still is and will continue to be so as long as he lives. He believes in publicity—in co-operative effort and anything else that will boost sewer pipe. He has an abiding faith in himself—in burned clay and in the men that make it.

Mr. Tefft is a big man—mentally and physically, and he enjoys life as only a well-balanced man can enjoy it. He is a dynamo of energy and his smiling face and massive frame fairly breathe the buoyancy of youth.

The Filipino as a Clayworker

His Evolution from the Primitive Potter, to the Scientifically Trained Ceramist Is Made in Less Than Two Decades

By Irwin C. Walker

Seven hundred years ago, the Japanese learned the potters' art from their Chinese neighbors. What progress the little brown men have made is too well known to merit comment. When, with the advent of the American soldier in the Philippines, education began to lighten the dark places, it was found that clayworking, in the lands that come to us by right of conquest, was at practically the same stage as it was seven centuries ago in Japan. With the stars and stripes, modern methods have been introduced, and today the United States government conducts ceramic schools that are revolutionizing the industry.

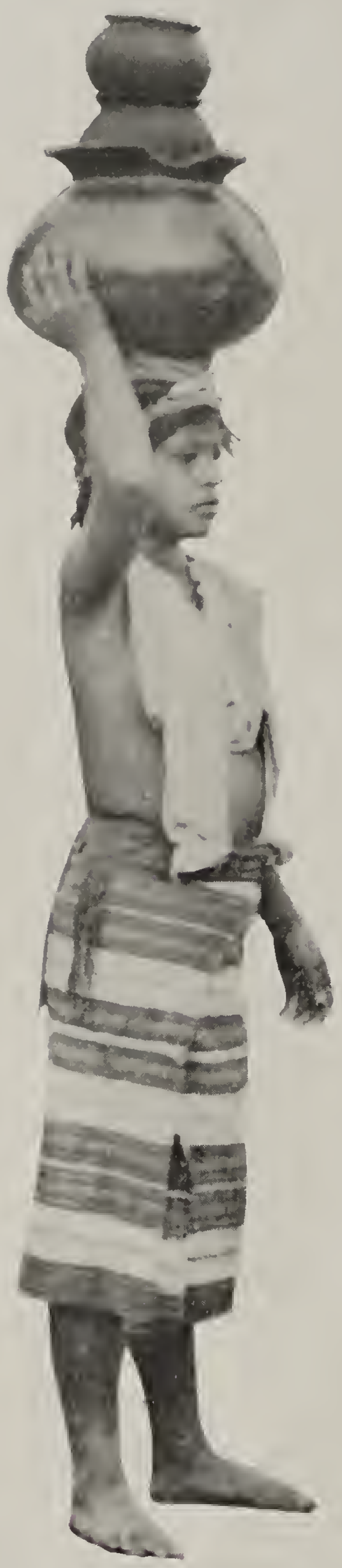


Figure 1—One of the Water Bearers

FIFTEEN years and six months ago, to be nearly exact, Admiral Dewey wrote his name in letters of gold on the World's history. At the same time, he committed this country, which had been called a nation of shopkeepers and "drummers" by the Spaniards, to a policy of paternalism unequaled in the written story of the progress of civilized or uncivilized peoples.

The Hispano-American war meant more to the natives of the Philippines than it did to either of the principals. Here, in what we like to call "God's Country," it created but a ripple on the calm waters of finance, trade and labor. True, it cemented the North and South and assured a solidarity of feeling that had waited for a generation to blossom into its full beauty. In Spain it meant a renewal of the warlike spirit and a weeding out of old ideals. Both countries gained, in sentimental ways—but the real gain came to the friar-ridden child of the Eastern archipelago. The wealth of the "nation of shopkeepers" was turned to the development of a nation that had stood still for many centuries.

Primitive people have always been potters. The earliest records of semi-civilization are written in burned clay. So it was that, when Uncle Sam began the development of Philippine manufactures, he turned to the craft that seemed most general and found that it consisted, principally, in the production of pots for holding water and for cooking food. These were made in the most primitive manner; the clay was not refined, no potters' wheels nor molds were used, no glaze applied and no kilns were built. The manufacture of pottery was principally a household industry, and was confined to localities where clay was found and where there were good facilities for its transportation. Almost every province had some town or *barrio* noted for its pottery production. A common sedimentary clay was used, which was sometimes so plastic as to require an addition of as much as one-third of its bulk in sand. Sticks and stones were removed by hand and the clay was mixed by tramping.

Instead of the potters' wheel, as we know it, a lump of clay was placed on a small board or block that could revolve more or less easily on another, placed beneath it. The clay was made into a crude, cup-shaped article, and then set aside until it took on a tough, leather-like consistency, when it was given a second shaping, by holding a smooth stone inside, and beating the exterior of the pot with a wooden paddle. The process is shown in Figure 3, where a native is shown, surrounded by her *lares et penates,* with a "little mother" as an interested spectator.

In Figure 4, the same potter is shown, making the rim of the pot, while in Figure 5, another native is seen adding the smooth finish that was sometimes given this crude ware by the addition of a coat of fine-grained red slip (probably ochre), rubbed in with a piece of large shell. The groups shown in Figures 6 and 7, with a background of thatched bamboo, illustrate the methods employed in the earlier forms of manufacture of smaller ware.

The process of burning was essentially crude, consisting of drying the ware in the open, and then piling it on layers of bamboo and rice straw, covering it with the same fuel, and burning it without any enclosing wall. This firing process took but a few minutes.

Following the universal custom of semi-savage people, the artisans were, for the most part, women and children, the men taking the finished ware and bringing it to market on their backs, on horses or in *bancas.* In Figure 8, however, it would appear that the male population of the mountain province in which the photograph was taken, has declared a *fiesta* or some other good reason for eschewing labor, for here the women are transporting the pottery and giving excellent account of themselves as "common carriers." The more ornamental group in Figure 9 are water-bearers and the peculiar shape of the vessels is worthy of note. A slight calculation of the combined weight of a vase or water bottle of this kind, and the contents, will give some idea of what a load these slight women can balance on their well shaped heads. The chances are, however, that only the lower vessel is filled, the others acting as covers.

About 700 years ago clay work in Japan was in approximately the same stage of development as is the industry in the Philippines today. The Japanese obtained their knowledge from China and proceeded to develop their industry. Today thousands are earning their living by working in factories. Pottery is also conducted as a household industry. Whole cities are devoted to the manufacture of some clay product and one sees father, mother, and children engaged in modeling, firing, glazing and decorating. Japan is well known for its excellence in porcelain and faïence. In contrast, in the Philippines one sees crude articles made in a desultory and primitive way. With the same efforts intelligently directed, more and better articles could be produced, resulting in greater earnings and a higher development of clayworking.

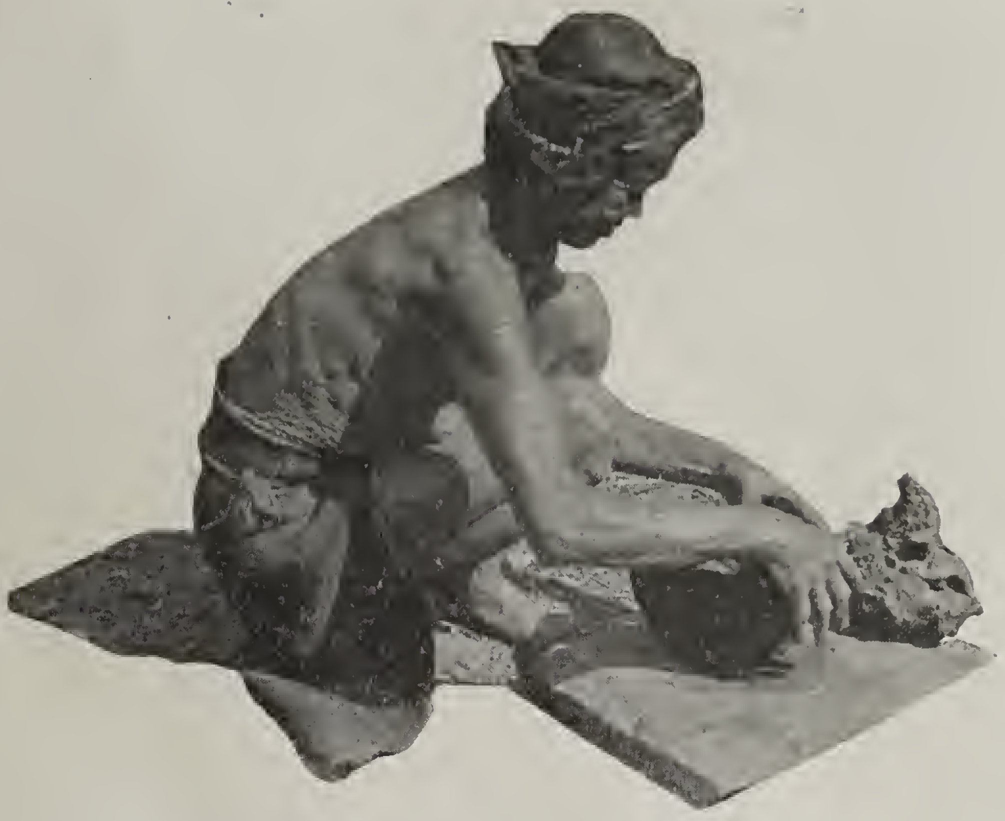


Figure 2—An Igorot Woman of the Mountain Province, Beginning a Pot.

The city of Seto, Japan, has a population of about 30,000. It is a center for porcelain manufacture and was the first place in Japan in which a glaze was applied to a burned clay. A *"Fiesta"* is held every year in honor of Kato, the man who introduced the art of glazing. The kaolin, feldspar and quartz deposits are near and there are plants for refining these. There are about one hundred kilns, each containing from three to seventeen ovens. One family may own from one-fourth of an oven to five or six ovens and produce enough every month in the home or factories to fill these ovens. The expense of firing is divided according to the amount of space occupied by each charge. Sometimes other families buy the glazed dishes, toys, etc., decorate them with color (china painting), and fire them in muffle kilns in their back yards. An old man with a doll in one hand and two brushes in the other will dash on the black for hair and eyebrows, red for cheeks and lips, and pass the doll on to his granddaughter, who will apply the other colors. Large factories often order great amounts of the unglazed ware and ship them to be glazed in their own kilns. Thus in Seto we see a city devoted entirely to clay work, with its pottery school, factories for refining materials and for manufacturing finished articles, household manufacture, and the allied work of packing and transportation. This is greatly in contrast to the Philippine pottery industry, but it is probable that a similar stage of the industry will be developed there.

An interesting local industry has been established at Piddig, Ilocos Norte, where small clay pipes are used, mainly as cigar or cigarette holders. These pipes are moulded from the clay by the use of the hands and two small pointed pieces of bamboo. These pieces of bamboo have one end pointed for making the hole in the stem and cutting the design. The other end is flatter and is used for forming the bowl both inside and out. To moisten the clay as it becomes dry it is necessary for the makers to use the grease and sweat from their noses. They believe that the quality of the pipe is improved thereby.

The pipes are burned in rice straw. After they are burned and while still hot they are covered with a preparation of rice chaff and barabao dung. The heat of the pipes sets the mixture on fire, but as the combustion is imperfect, a deposit of carbon forms on the pipes and turns them black, giving them a glazed effect. The people know nothing, however, of real glazing.

The decoration always consists of two designs. One is called "Sinicirilo," or face of man, and the other is "Siguemguem," or hand of man. Large quantities of these pipes are used by Ilocanos. The price runs from three to ten centavos each.

There are a few factories in the Philippines and these use kilns. The Spanish introduced the dome-shaped beehive kiln, which was used to fire Spanish roofing tile so much in vogue before galvanized-iron roofing was introduced. This type of kiln is now used for firing brick. The usual type of a pottery kiln is a long semicylindrical structure introduced

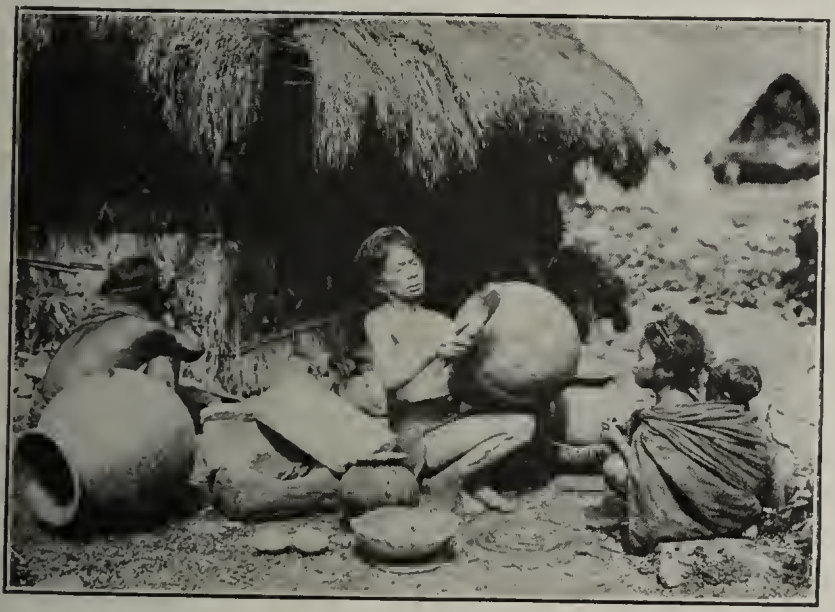


Figure 3—Shaping the Pot with a Wooden Paddle.

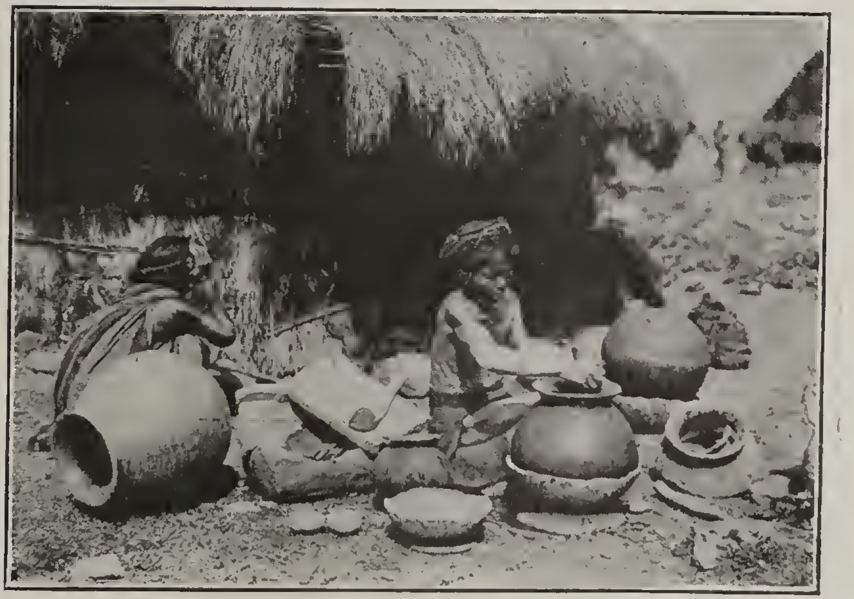


Figure 4—Making the Rim. Note the Protecting Bowl.

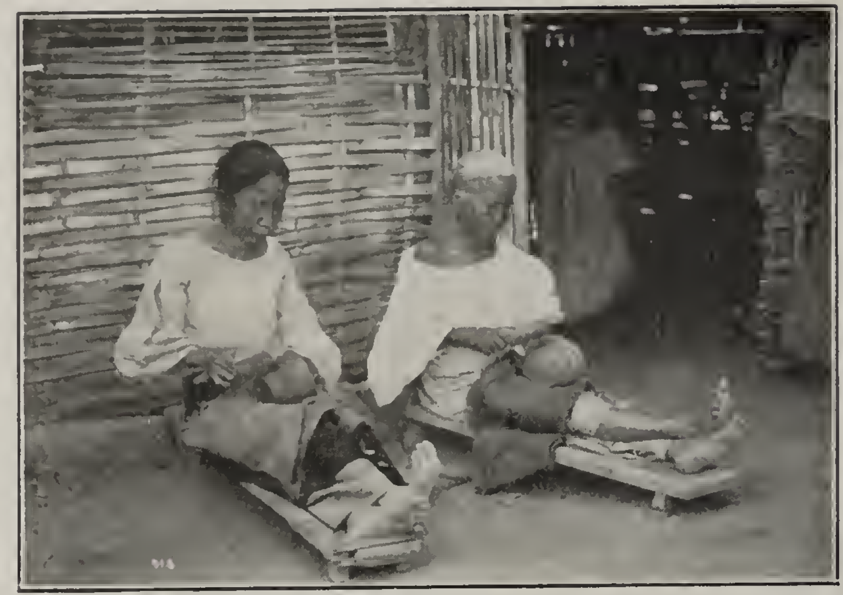


Figure 6—Work Benches that Seem Comfortable.

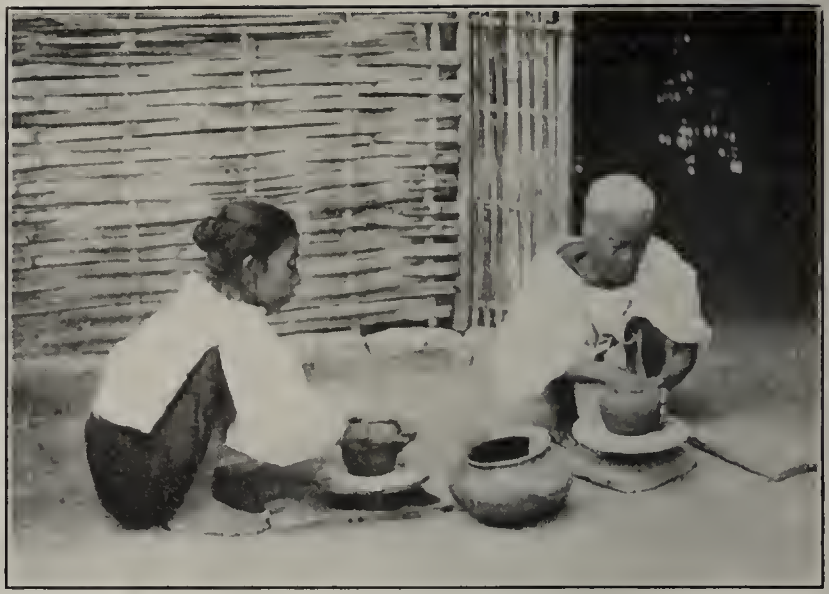


Figure 7—Shaping the Smaller Vessels by Hand.

by the Chinese, in which are produced the large *tinajas* and sugar *pelones*. The kilns are fired with wood. The temperature attained is low, but the clay is very fusible and a semivitrified product often results. A Japanese kiln has lately been introduced. This consists of two ovens—the first for glazing and the second for firing biscuit.

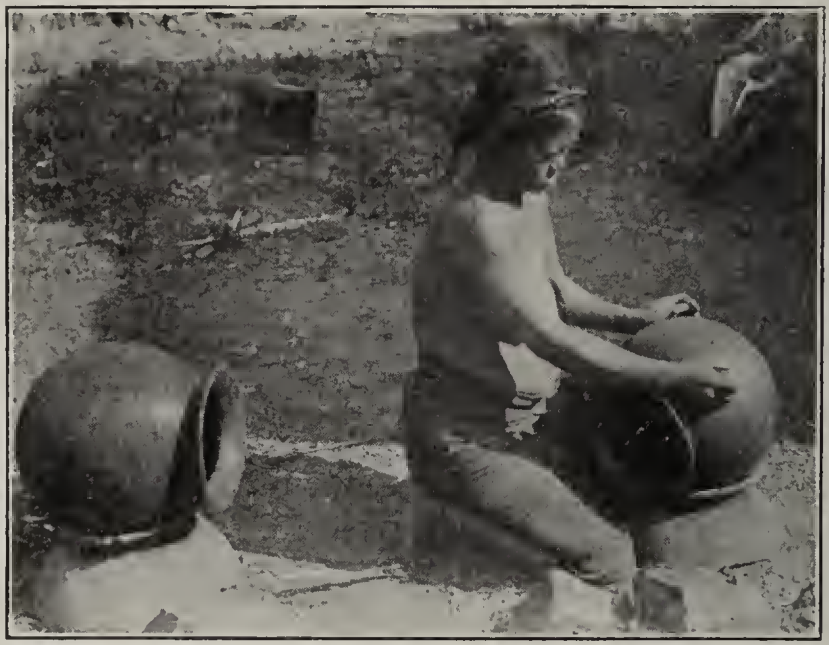


Figure 5—Making a Smooth Finish with a Piece of Shell.

Such were the crude processes and utter lack of tools, appliances and accessories that confronted the ceramists that came from the enlightened "Land of the Free" to lift the newest wards of civilization from barbarity.

They found, however, an intense desire for knowledge, a remarkable aptitude for the use of—to the natives—untried tools and appliances, and a praiseworthy willingness to give close application and untiring labor to the work planned by those who had come to instruct these ignorant children of the islands. Considering that pottery making had been a household craft, handed down from mother to daughter for so many centuries, the fact that innovations were given such ready support augers well for the future of the industry.

We have said that 700 years ago, clay work in Japan was in approximately the same stage of development as the American industrial instructors found it, at the close of our war with Spain. The progress of the Japanese potters in that time is too well known to need more than passing comment. What then can be said of the dark period that lay like a pall over the fertile islands that are now beginning to show the effect of an educational campaign that is still in its inception?

The Bureau of Education, established by the United States Government in the Philippines, has recognized the opportunities for the advancement of clayworking in the Islands, and in accordance with its industrial policy, organized a pottery school in 1910. This school was started in Laguna Province, but was later moved to Manila, and became the Ceramic Department of the Philippine School of Arts and Trades. What progress it has made and is making will be told in a subsequent article, which will appear in the next issue of this magazine.

"Brick & Clay Record" is indebted to Frank L. Crone, Acting Director of Education, and to Clifford H. Crowe, Instructor in Ceramics, Philippine School of Arts and Trades, for the photographs published with this article.

Figure 8—A Pack Train in a Mountain Province.

Figure 9—A Line of Water Bearers in an American Settlement.

One of the Streets in Chicago's Community of Low-Cost Brick Homes

Building Brick Homes for Working Men

Realty Firm Erects 400—A Stretch of Two Miles—and Sells Them for $2,800

By William H. Burkhard

There was a time when the average man looked upon a fire-proof, frost-proof, heat-proof and time-defying brick house as "only for millionaires." That, however, was in a day when frame construction was cheap and brick expensive. Today even the man of modest income knows that he can have safety and comfort as well as one more favored by Dame Fortune.

This article by Mr. Burkhard tells how 400 families living in one community in Chicago, have solved the problem—or had it solved for them—by realty firms who pinned their faith on the "best building material," and built two miles of cozy, substantial homes of burned clay, selling them at a price that chased away that old bugaboo of the lumber man—high cost.

In considering the cost items Mr. Burkhard has given, attention is called to the fact that these figures carry a PROFIT to the builder, the cost of the lot and items that, while necessary to the comfortable occupancy of the house, are not usually included in schedules of costs. The houses, too, were built in Chicago, where labor and material are higher than in any other large city in the country, working under normal conditions.

WORKINGMEN and others of modest incomes are buying brick-constructed homes in the northwest part of Chicago. More than four-hundred brick dwellings have been erected within the past eighteen months in the vicinity of 40th and Chicago avenues, and sold either outright or on the monthly installment basis to as many men, whose average annual earning capacity is less than $1,500. The demand for these houses has been so great that the builders are preparing to erect a hundred more in the Spring of 1914.

The houses, one-flat and two-flat dwellings, are selling for $3,300 and $4,500 respectively. This price includes the lot, which is listed at $500, and makes the selling prices $2,800 and $4,000 respectively.

The real estate builders of modest priced homes are waking up to the fact that it is just as easy to sell a brick dwelling as it is a wooden one. Strange as it may seem, they found it profitable to cater to an army of small buyers by offering what had, before, been considered too good for poor folks.

The brick trade will find in this new and progressive class

Here Are the Cost Figures—

One Family House

Built of brick with asphalt shingle roof, cement foundations and basement, laundry equipment, plumbing, gas and electric fixtures, china closets—including builder's profit and interest on installment payments $2,800

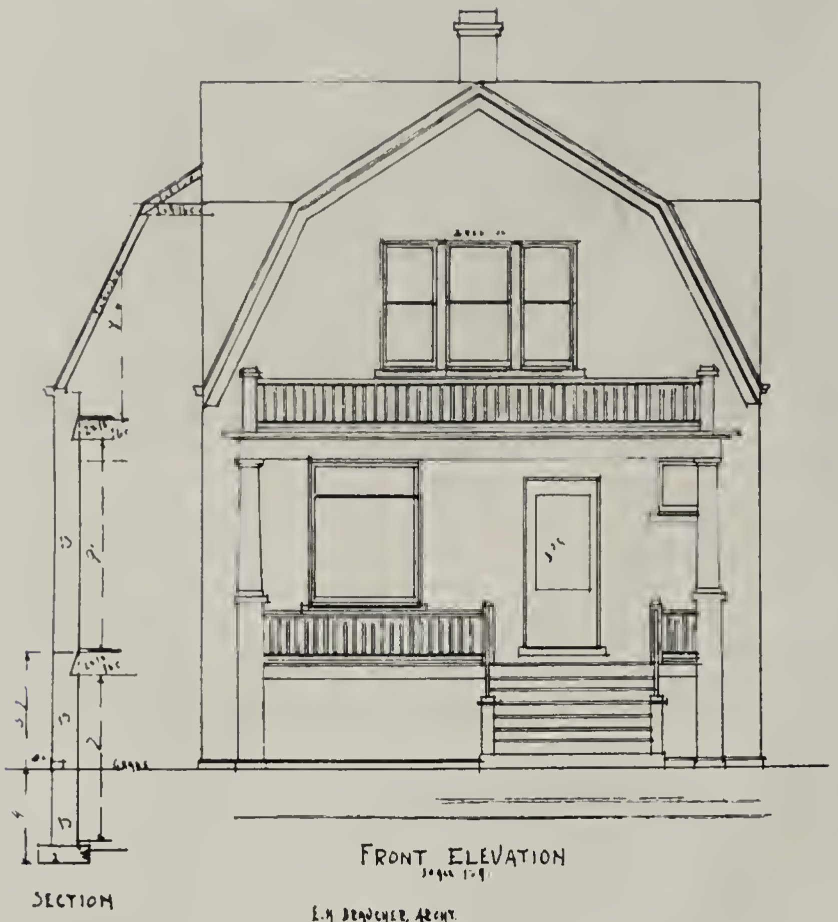
With the $500 lot which goes with the house, the total selling price is $3,300.

Two Family House

Built of brick, two stories, with asphalt shingle roof, cement fonndation and basement and all the equipment and fixtures given above, including builder's profit and interest on installment payments $4,000

With the $500 lot which goes with the house, the total selling price is $4,500.

45002
34"x18'
23'x40'
E. or N.



FRONT ELEVATION

E.H. DRAUCHER, ARCHT.
501 STRAUS BLDG
CHICAGO

of modest salaried brick-home purchasers, a selling field that bids fair to yield a rich and surprising harvest. It will be their own fault if much of it goes to cement stucco.

This "Community of Brick," represents nearly two miles of homes and comprises two sub-divisions which were opened by two real estate building firms, namely Ellsworth T. Martin & Co., and Mills & Son. It extends from Chicago avenue to Division street, on Fortieth, Forty-first, Forty-second, and Forty-third avenues. The site for these brick homes is admirably situated. It is located away from the noise and traffic of the business and manufacturing sections of the city. Transportation facilities are good, there being two downtown car lines in the immediate vicinity.

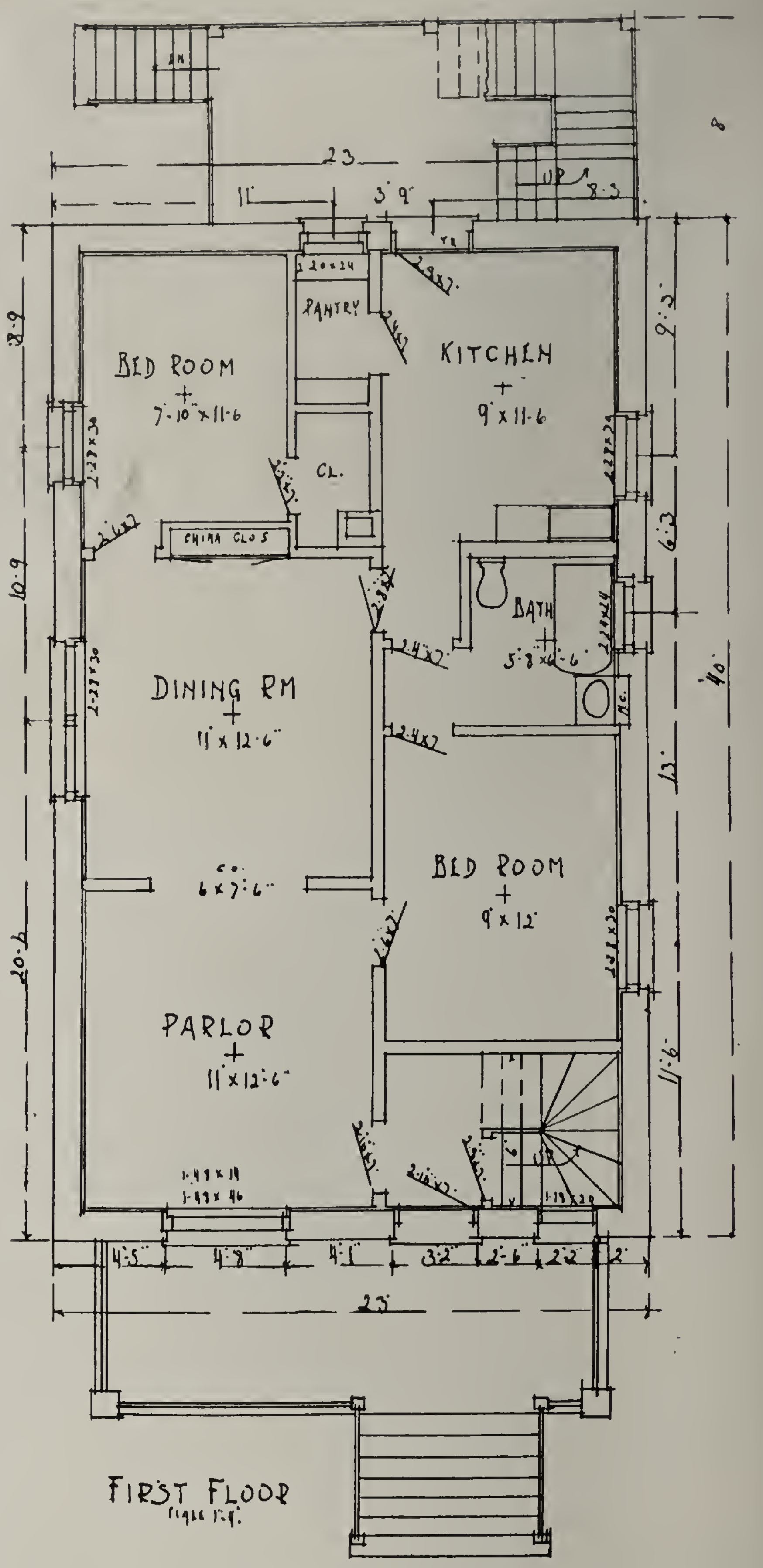
When it is borne in mind that these brick residences have asphalt shingled roofs, cement foundations, complete plumbing, combination gas and electric lighting, and that the costs given are real costs, on houses that actually have been built, that they include a profit to the builder, it will be seen that they are of great interest to every person interested in the building industry.

These moderate-priced houses have been built of the best classes of materials that enter into the construction of dwellings of this type and are not "skin-built" in any particular. The floor plan shown is of dwelling Type A, which is the two-flat, ten-room house that sells for $4,500. The floor plan of Type B, which is a one flat, five-room dwelling, is the same as the first floor plan of Type A, the two-flat house. The analyzed cost of one of the two-flat homes run as follows:

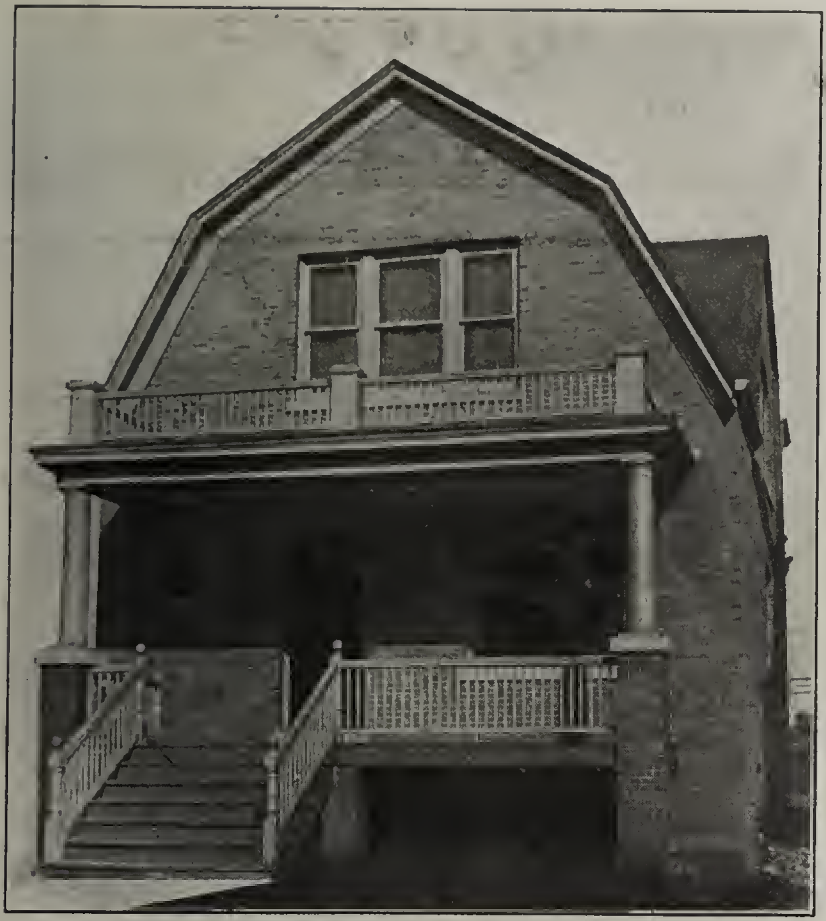
Excavation	$ 22	Hardware	130
Cement work (foundation, basement, walks).	345	Electric wiring	76
Brick (face and common)	830	Gas fixtures	45
Lumber (including fence in yard)	550	Glass	59
Plumbing (sewerage and gasfitting)	460	Ashpalt shingles (roof)...	70
Millwork	405	Carpenter work and other labor	550
Plastering and lathing...	308	Lot (30x127)	500
Painting	150	Total cost	$4,500

Type A and B are both built on 30 foot lots. Each of them have a spacious and airy cement basement. In type A, there is installed a two-family laundry tub in the basement, and in type B, we find in the cellar a well-equipped tub for one-family use. Modern bath-rooms are one of the features of both dwellings. In type A are two bath-rooms, one on each floor. Type B. has one bath-room, located on the first floor. Both types of houses have the same kind of interior, oak finish. The dining-room and parlor of each dwelling are oak-floored, while the kitchen, bedrooms and bath-room are layed in maple. An artistic china closet graces the dining-room. Each kitchen is fully equipped with modern plumbing features, including an A-1 hot water tank. Stove heat is used in most of these houses, but furnaces have been installed in some instances at the expense of the home buyers, the cost of the installation being very low.

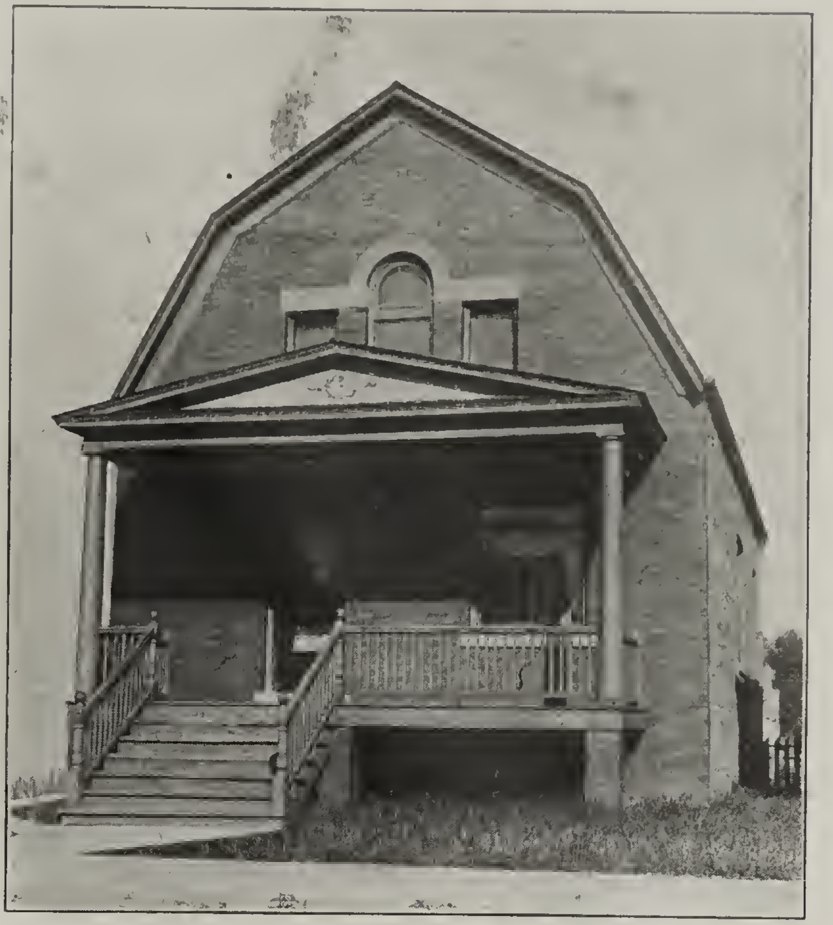
Type B, which houses comfortably one family, is built somewhat on the cottage plan. In its design, both interior and exterior it is pleasing to the eye. It has a well-built and roomy back porch with one flight of stairs that descends to the basement. Like Type A it is built with twelve-



FIRST FLOOR



The Two-Family House—Type A.



The One-Family House—Type B.

inch brick walls, and with cement chimney. The itemized cost of building a Type B, brick dwelling runs in a few things parallel to the listed cost of Type A. Here, however, are the itemized expenses for building the Type B dwelling:

Excavation	$ 22
Cement (foundation, basement, all walks)	326
Brick (face and common)	726
Lumber (including fence in yard)	420
Millwork	248
Plumbing (sewerage, gas-fitting)	276
Plastering and lathing	154
Painting	75
Hardware	70
Electric wiring	42
Gas fixtures	28
Glass	46
Ashpalt shingles (roof)	67
Carpenter work and extra labor	300
Lot (30x127)	500
Total cost	$3,300

The majority of both types of residences have been disposed of on the monthly installment plan. The terms on Type B, the one-flat house, are $300 down and a $25 monthly payment. Type A requires a $700 deposit and a $40 monthly installment.

The people living in this thriving community of brick appear to be enjoying the acme of snug material comfort. They fully realize that they are dwelling in cozy and sanitary brick domiciles that have the stamp of stability and quality upon them, from basement to roof. Gazing down one of the streets one observes a vista of attractive and durable homes that breathe a harmonious community spirit without sacrificing the individual privacy of their occupants. Here in short, we find an environment admirably adapted to the salutary and sanitary bringing up of children. What a contrast between this superior picture of domestic existence—and that other view as exemplified in communities where so many rotting, bug-ridden, insanitary, and unattractive frame houses prevail and are a constant menace because of the fire peril.

All the houses in the "Community of Brick" have been constructed along practically the same architectural lines. A variety of different shades and textures in the face brick used adds to the pleasing effect. When this district is completely built up, it is estimated that the dwellings will house nearly 3,000 men, women and children. Thus the population of this section will total that of the average small town.

The "City Beautiful" idea will be adhered to in the improvement of the streets. At each street corner, a handsome brick entrance will be erected so as to give each block the appearance of a small, but pretty parkway. These parkways will be maintained by the real estate builders for five years. This maintenance includes the cost of erection of the street entrances, sodding and caring for the front lawns, planting shrubs and trees.

The paving material to be used in this district has not been definitely decided. It is said, however, that the property owners are "betwixt two fires," in the matter. Many of the new home purchasers, in discussing the question recently, held out in favor of brick-paved streets, because it would blend so attractively with the general brick-building scheme of the community, and also because of its durability and cleanliness. On the other hand, asphalt has adherents and cedar block a certain standing, principally on its claim of noiselessness. Here is a chance for the "booster of brick streets."

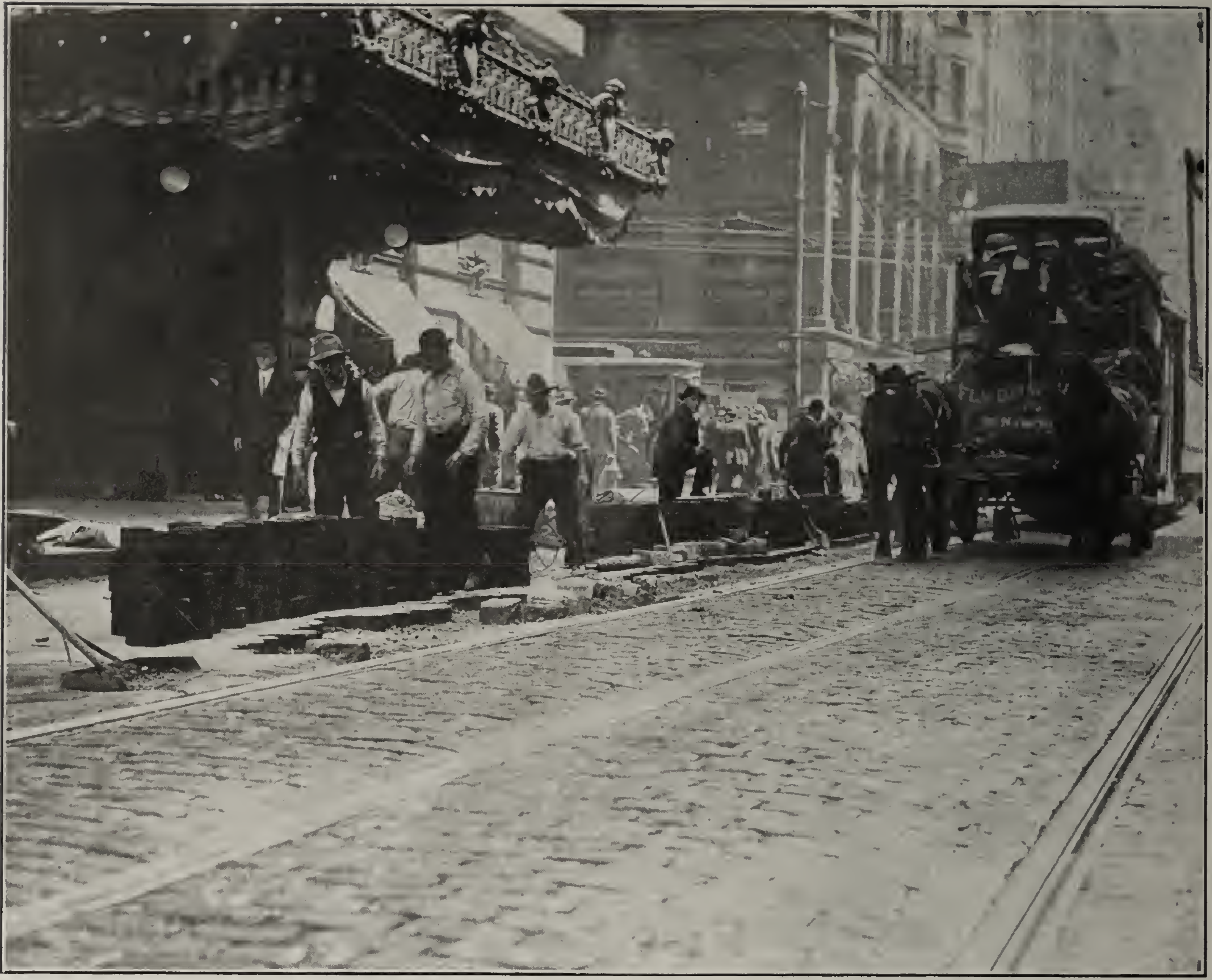
In conclusion, it is well to emphasize the importance of this movement toward the use of brick in speculative buildings of the character illustrated. Here are 400 buyers—400 jobs taking from 20,000 to 30,000 brick each—a tidy little matter of 8,000,000.

We Will Give You
One Dollar for an Idea

Turn over to the Superintendent's Department and note the page of small items. We will pay $1 for similar tips and they need not be more than 25 words.

$5 for the Best Idea

Each issue we will award a special prize of $5 for the tip or suggestion deemed best in that issue.



Randolph street, Chicago—This thoroughfare was paved with creosoted cedar block and was opened for traffic Aug. 8, 1910. The photo was taken June 6, 1912, and shows the street torn up between Clark and La Salle streets, and being patched after 22 months' wear.

Creosoted Block a Failure

Chicago is known as the "Home of the Creosote Block"—not that it is a pioneer in this form of street paving, but because it has adopted the material for the downtown, or "Loop" street district and is using it almost exclusively.

The use of the creosote block has been sufficiently long to enable an unbiased investigation into the merits of the material and this article is the result of an inquiry made by "Brick and Clay Record."

DOES the "creosote" block make a good pavement material for heavy traffic streets? Using Chicago's experience as a criterion one must answer that it does not. A pavement, such as is required in the famous "Loop" district of Chicago, must have at least four qualifications.

First, it must be sightly.

Second, it must afford a good footing for teams.

Third, it must have wearing qualities.

Fourth, it must be able to stand frequent incisions to permit of the constant attention given to the water and gas mains and to the electric, telephone and telegraph conduits.

Following a careful inspection and investigation of Chicago's "creosote" block paved streets "Brick and Clay Record" feels called upon to say, most emphatically, that this style of pavement is a failure, because it has failed in every one of the four qualifications noted.

QUALIFICATION NO. 1—The "creosote" block streets of Chicago, particularly those in the "Loop" district, which embraces that small area confined by the four "walls" of the elevated loop structure and in which is located Chicago's great retail center, are not sightly. To begin with, when the block are first laid, a heavy coating of tar is spread over the surface and for weeks after, pedestrians are forced to track through this sticky substance and not only decorate the adjacent sidewalks and store floors with it, but also soil their clothing.

This condition, thanks to the thousands that pass over the "Loop" streets every hour, is of short duration. For a brief season the "creosote" block, as far as appearances go, is all that is claimed for it. It presents a smooth, shiny surface, as slippery as an eel, especially where the trail of the water sprinkler is to be found.

If this slippery, smooth surface were a permanent proposition, Qualification No. 1 might be given an approval, despite the unsightliness of the first few weeks, but it does not. The blocks soon begin to show deterioration. Frequently this is true within the first two or three months. Many of the streets get in such bad shape before six months have passed they have to be repaired or re-surfaced. Those that are left uncared for, as many of the downtown streets of Chicago are, become an eyesore and rob the "creosote" block of its opportunity to qualify on the score of sightliness.

QUALIFICATION NO. 2—No pavement that is slippery meets with the approval of the teamster who has any regard for his horses. That Chicago has as humane drivers as the average city is attested by the numerous and frequent scenes enacted on the downtown streets daily. In the Summer, when conditions are ideal for other forms of pavement, it is no uncommon sight to see horses that are pulling heavy trucks slide along the wooden block, the driver tugging frantically at the lines to "hold their feet," but without success. Crossing policemen have become so proficient in assisting the teamsters in unhitching the fallen equines and getting them back to their feet, that their accomplishment is a source of remark by the visitor who stops and watches the "trick" with ill-concealed wonderment.

If this situation exists in the Summer months, what about the Winter months with their snow and sleet? A report of any of the humane officers stationed in the downtown district would give answer to this question. It is a fact that in no other city does the humane society find it necessary to employ so many officers to aid the unfortunate horses as it does in Chicago.

Since the installation of the "creosote" block in Chicago the daily newspapers have found it necessary to wage a campaign of education among the teamsters, urging them to procure safety devices, patent shoes and chains. Members of the Humane Society, usually women, are stationed at convenient corners in the "Loop" armed with some of these devices ready for any emergency. The teamsters, trained in the use of the blanket, are adepts at throwing the welcomed cloth under the fallen horse to give him a foothold to raise himself, with the assistance of the nearby policeman and willing pedestrians.

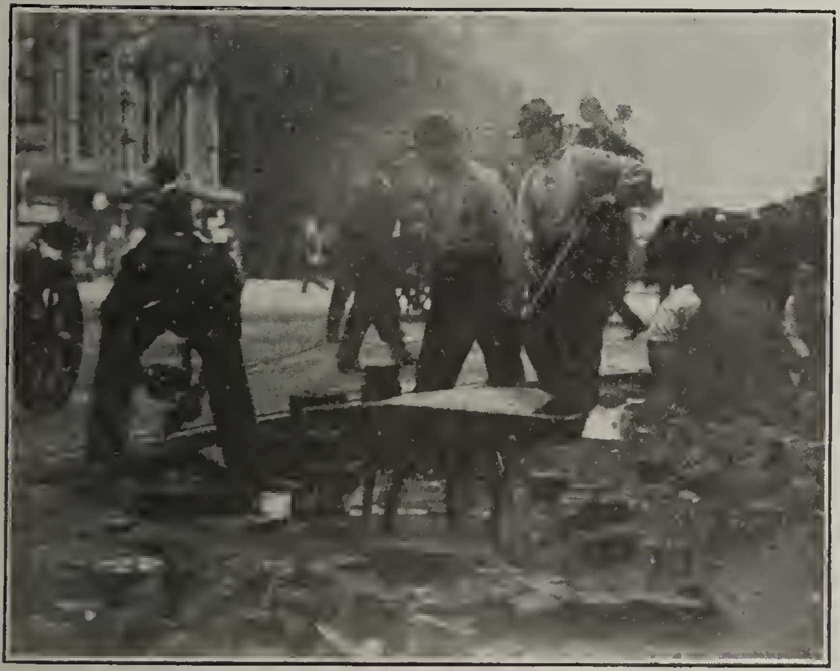


Fig. 3—La Salle Street, Chicago, at the Intersection of Washington Street. Open for Traffic in August, 1910, the Photograph Being Taken May 26, 1912. Picture Shows Gang Repairing Pavement.

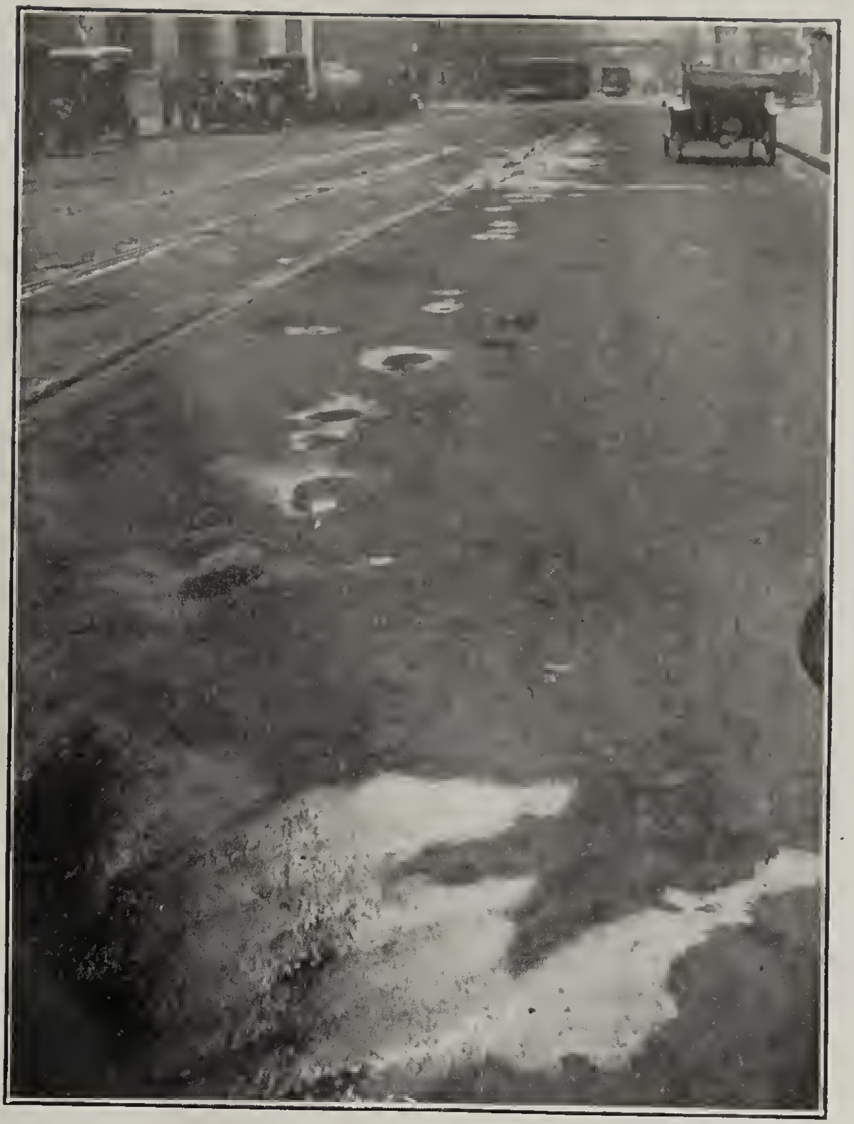


Fig. 2—Another View of Randolph Street, Chicago, Between Clark and La Salle Streets. This Street Was Opened to Traffic Aug. 8, 1910. The Photograph Was Taken May 26, 1912, Just Across the Street from the Section Shown in the Picture that Heads This Article. Note the Water-Filled Holes. This Street Since Has Been Replaced.

In view of these facts it must be said that the "creosote" block absolutely fails to meet with Qualification No. 2.

QUALIFICATION NO. 3—Despite the creosoted treatment given the cedar block and the broad claims made by its manufacturers and sponsors, this form of pavement does not wear. One glance at any of Chicago's famous downtown streets, including those that have been laid only for a brief period, is convincing argument.

Take for instance Randolph street, between LaSalle and Clark streets. This street, while in the "Loop," is one of the least traveled in the district. It is off from the heavy traffic line of the downtown section. This street was paved with cedar block and opened for traffic Aug. 8, 1910. The photograph which heads this article shows that portion of the thoroughfare in front of the Sherman House, and was taken June 6, 1912. Inspection of the picture shows the street being torn up after twenty-two months of wear, preparatory to repairing. The repair gang is in action and the new "creosote" block are clearly defined in the picture.

Picture No. 2 is a detailed view of this same street taken just across from the Sherman House. The photo was taken May 26, 1912, and gives one a pretty clear idea as to the condition of this street before the repair gang was turned loose on it. Note the water-filled holes. This side of the street has been repaired since, almost the entire surface being replaced.

Picture No. 3 is from a photograph taken May 26, 1912, in LaSalle street, at the intersection of Washington. Like Randolph street there is not near the traffic on this street as there is on some other downtown streets. This street was opened to traffic in August 1910. The picture shows a repair gang at work relaying this street with creosoted block. Picture No. 3 is a detail view of one section of this pavement before it was replaced. It was taken at the southwest corner of Washington and LaSalle streets at the same time the other picture was made. The worn condition of the block was much worse at other points. Figure 4 is another picture taken at the southeast corner of LaSalle and Washington streets and brings to view a real action picture, the photographer "catching" the repair gang as it unloaded new "creosote" block to replace the old and worn out surface.

These particular cases are but a few of several—in fact they are illustrative of the entire "creosote" block pavement system in Chicago.

It is necessary to keep a repair gang constantly repairing or relaying new block over the entire district. In many cases, where traffic is heavier than in the ones cited, the streets go to pieces within a few months after they are opened to traffic. For instance in LaSalle street, near Madison, and between that street and Monroe, unsightly holes and a complete decay is found the entire length. This street has been down but a few months and should have been replaced sometime ago. Close to the street car tracks, where the heavy wheels of the wagons and motor trucks give it the hardest wear, the blocks have crumbled away as if they were made of the softest of pine untreated. In places the holes are six inches deep and several inches wide, extending for a distance of from twenty-five to fifty feet. This is particularly true in front of the Otis building.

Adams street, down but a few months, is being relaid as this article is being written.

In discussing the condition of the "Loop" streets with one of the foremen of the repair gangs a representative of "Brick and Clay Record" was given a pretty fair idea as to the way the "creosote" block is looked upon by at least those who are employed by the city street department.

"This is a pretty expensive form of pavement is it not?" asked the investigator.

"Well, yes," replied the foreman, "but the property owners (the owners of the great loop sky scrapers) can afford it. You see it is not like it was out on a resident street. There'd be a howl right out there. These fellers can lay a new street every month and not feel it."

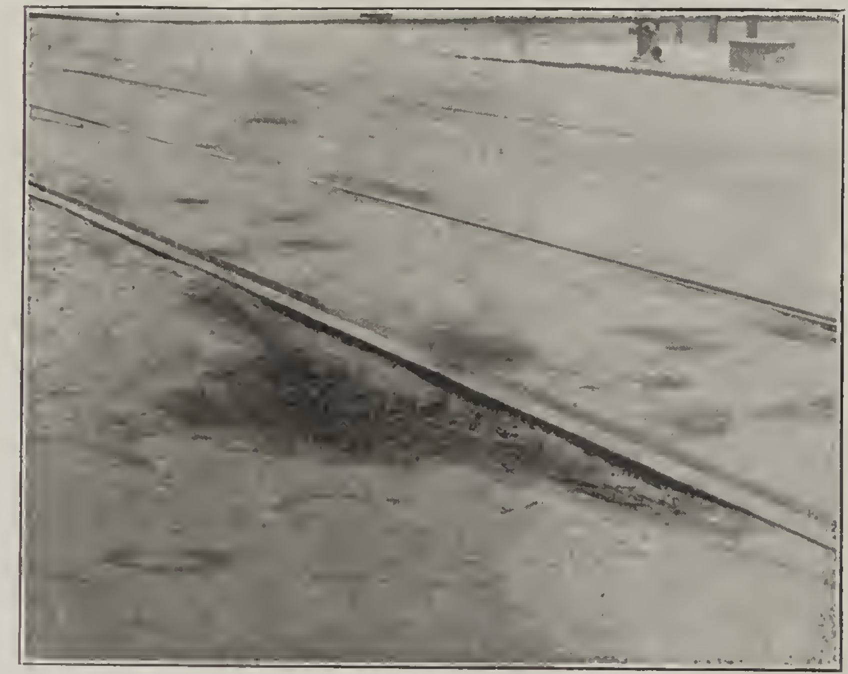


Fig. 4—Near the Same Section as Shown in Fig. 3. This Pavement Since Has Been Replaced.

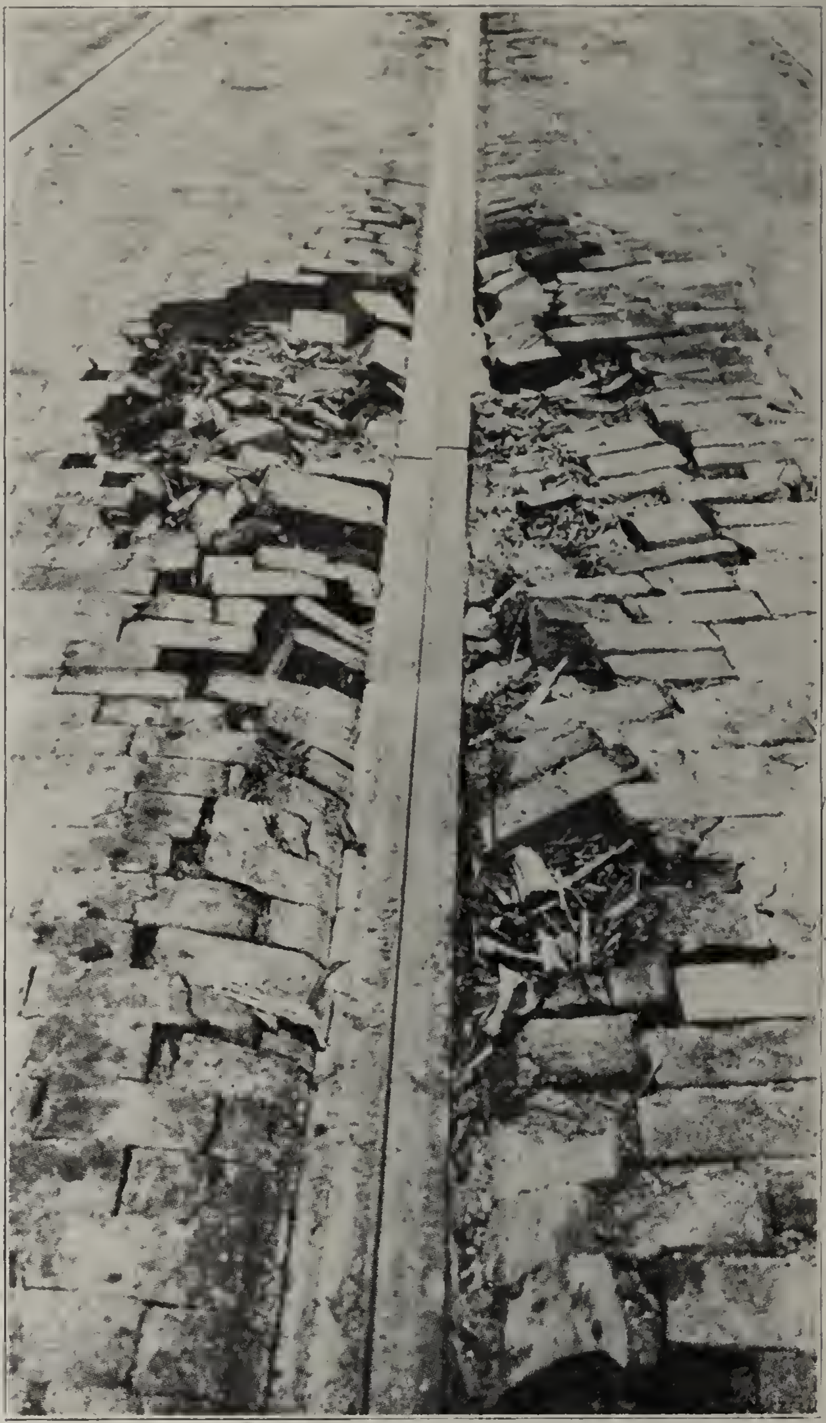


Fig. 5—This Is the Condition of Many of Chicago's Famous Creosote Block Streets Before the Repair Gang Gets to Work On It.

It would seem from this viewpoint that so long as the fellow that pays the bills is satisfied there should be no kick made. But, it appears on the surface that a set of men, who have business foresight developed to such an acute degree as undoubtedly the skyscraper owners have and who figure on the outgoing dollars with just as much care as anyone, naturally would figure a trifle closer on the pavement investment.

"Undoubtedly there is a better paving material than creosoted cedar block," said one "Loop" property owner who was approached. "Brick, for instance, would be the ideal pavement if it was not for just one thing—it cannot be torn up with the same frequency that less durable materials can be displaced and relaid. This, as you know, is essential because we are constantly tearing up Chicago's streets. The city continues to grow at a very fast pace. Why, downtown here, it is not uncommon to see workmen come along within a few hours after a street is opened to traffic and begin to open up the surface to get at the gas or water mains or to tinker with some of the other underground bowels of the thoroughfare."

The property owner was cited the case of Cleveland where the brick-paved streets are frequently torn up to afford the lighting and power plants to get at their conduits.

"The method employed, however, in Cleveland," said the

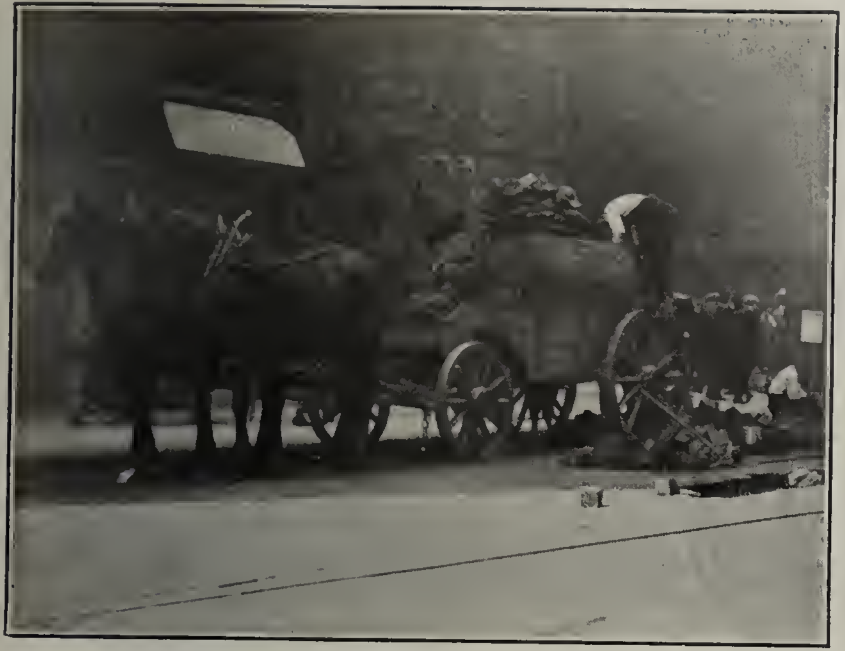


Fig. 6—The Southeast Corner of La Salle and Washington Streets. Photo Taken May 23, 1912, *Shows Gang Unloading New Creosote Block to be Used in Repairing Pavement Newly Laid in August,* 1910.

reporter, "is entirely different than here. First of all the work is done under the direct supervision of the city engineer and either he or someone from his office sees that the incision is properly made and the contractor is forced, by cash bonds, to replace the paving block in just as good condition as they were originally."

"But do they?" asked the property owner.

"Certainly, and the engineer will take special pride in going over one of these streets so tampered with and defy you to find the spot where the incision was made."

It might be added here that Assistant City Engineer Gableman of Chicago, who attended the recent convention in Cleveland of the National Paving Brick Manufacturers' Association, made a statement at the public banquet given the visiting engineers, following the tour of the inspection of Cleveland's famous brick-paved streets, which showed that he had been made a convert to brick pavements.

Mr. Gableman, in his "confession," said that he had never believed that so good a pavement could be laid of vitrified block as he found in Cleveland.

"You appear to have solved the solution here," he said. "When Chicago quits growing I hope to see brick used there as you have it here."

Mr. Gableman, however, like the average Chicago man interested in paving, still clings to the idea that brick must be tabooed on the busy streets just because it is a city that is growing and requires a constant up-tearing of the surface.

QUALIFICATION NO. 4—The "creosote" block fails in this requirement, as it will not stand the frequent incisions necessary in Chicago because of the constant additions to the water and gas pipe mains and to the electric, telephone and telegraph conduits.

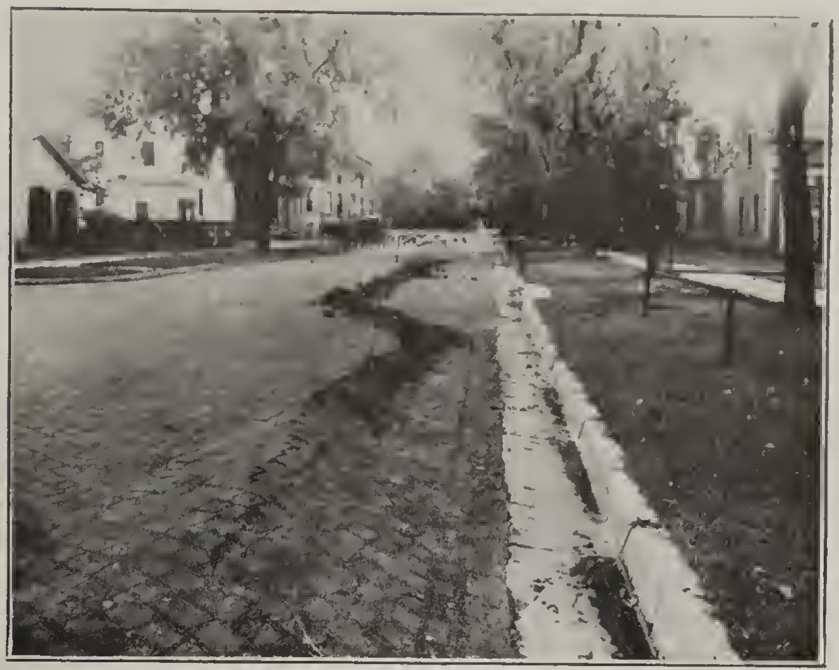


Fig. 7—This Is a Street Laid with Creosote Block in La Crosse, Wis., in 1906. *It is Cass Street and Photograph Was Taken in* 1913. *Note How the Block Have Raised. This Is Due to the Absence of the Oil and the Subsequent Shrinking and Swelling.*

An inspection of those streets where incisions have been made shows that the block once removed develop a weak spot which means rapid decay. It is impossible to replace the block so that they will not permit of moisture entering the interstices and moisture is death to the wooden block.

SUMMARY—A close analysis of the wooden block, despite its creosoted treatment, shows that it is an impossible pavement material. To begin with the block is of wood. Wood is not impervious—it is full of pores which once were full of sap. The cooking and steaming process draws this sap from the pores and these then are filled with oil. If the oil would remain in the pores the "creosote" block would have some claim for durability. The fact, however, is that it does not. Oil has a natural repugnance for water. The "creosote" block is exposed constantly to water. There is the constant wetting of the surface by the sprinkler and then there is Nature's sprinkle—the downpour of rain and the melted snow and the slush of the Winter.

The tendency, then, is for the oil to raise to the surface, it being lighter than water, and it does, oozing out of the block. The water soon takes its place in the pores. What is the result? The first warm day dries the water out of the block. The block shrink and they become loose. The sprinkler comes along and gives the yawning pores another fill and the block swell. There is an upheaval. With this action constantly occuring what is the natural result?

Some Recent Incorporations

Enfield Pottery & Tile Works, Enfield, Pa. Capital, $30,000.

Creedmoor Planer & Brick Company, Creedmoor, N. C. Capital, $25,000.

Hyalite Brick Company, Wilmington, Del. Capital stock, $50,000.

Winchester Brick Company, Portland, Me., $250,000. F. K. Laughlin, E. M. White.

Crisp Press Brick Company, Crisp, Kaufman county, Tex. Capital, $30,000. Incorporators: W. F. Allen, Ben Allen and J. P. Sims.

Littleton Unit Brick Company, Littleton, Mass., $60,000. Incorporators: Batholomew Couling, Earle T. Spear and Charles C. Spear.

Pacific China Mfg. Company. Capital, $20,000. Emil Fernholz, William Petry, O. Steiner, Theodore Dittell, and A. L. Bartlett, all of Los Angeles, Cal.

Centre County Clay Company, Bellefonte, Pa. Capital, $25,000. Frank H. Clemenson, president; R. Russell Blair, secretary; Frank P. Blair, treasurer and general manager.

Irish Mountain Clay Company, 115 Market St., Camden, N. J. Capital, $100,000. J. A. Lowden, 115 Market St., Camden, N. J., J. R. Chessman and A. C. Ubil.

How to Test Lubricants

Simple Methods Which Any Clayworker May Employ to Prove True Value of Oils and Stop One Source of Plant Leaks

The problem of the proper use of lubricants in the clay plant is one few pay much attention to. That there can be waste and that there can be an improper use is shown very clearly by Mr. Phillips. Few clayworkers, however, know HOW TO SELECT their lubricants. An inferior article may be palmed off on them very readily because of this ignorance. Mr. Phillips gives simple directions for TESTING lubricants—so simple in fact that any clayworker may make his own tests and get just as good results as a chemist and with little cost, effort or time.

By W. W. Phillips

IN the days of ancient Greece it was customary for the athletes to anoint their limbs with oil. Frequently the modern brickmaker has a similar experience—not that he has any faith in the anointing process, but because it seems to be an impossibility to be in and around a brick plant long without accumulating a considerable quantity of oil, not only on the limbs, but on hat, trousers, shoes and hair.

Up until recently lubricating oils almost were entirely animal or vegetable. Now the use of either is rare. Mineral oil is used almost exclusively. Mineral oil is the by-product of petroleum refining. Some brickmakers may not use mineral oil for a lubricant. They do not have to. Mare's oil is said to be good. I do not know; I never used any of it. I have used mineral oil and I do know something about it. There has been a lot of fraud connected with the sale of lubricating oils. I do not blame John D. Rockefeller for it. I do not blame anybody for it. I do not want to be defrauded when I buy oil. Do you? I know you do not. It is an unnecessary loss.

It might be instructive to go into the details of the process of refining petroleum and producing lubricating oil. I do not propose to do it, even if it would be instructive. Doubtless it would be worth something to the practical man to be able to get a lot of expensive chemical apparatus, such as the Elliott closed cup, for the determination of the flashing point of oil, or the Abel closed-cup tester. They would be very helpful for chemists, but I am under the impression that there are a great many men with a pretty faint knowledge of brickmaking that know nothing whatever of the wonders of a test tube.

Practically, all brickmakers use oil and there should be some simple method of testing it that a man with no chemical knowledge should be able to conduct. There is such a method. Any intelligent man with a little practice can become a good judge of oil by observing a few simple rules. The tests I give, of course, will not be equal to a chemist's report, but they will be sufficiently reliable for practical use.

In the first place, remember that these tests are for mineral oils. There is no question that with reference to quality and cost, mineral oil is the best for the brickmaker under all ordinary conditions. Mineral oils are not affected by high pressure steam, or alkalies, while vegetable and animal oils are. Of course, it is not to be inferred from this that vegetable and animal oils have been driven from the market or are likely to be. They are not. They have their uses and will continue in use.

The following tests will be of some assistance to anybody who will carefully follow them:

The value of a lubricant depends, to a large degree, on the amount of greasy particles it contains. This is called its viscosity. In order to test the viscosity, get several samples of oil, pour a few drops of each sample on perfectly smooth glass while the glass is level, then raise one end of it about an inch. The last to reach the bottom of the glass indicates the highest viscosity. Carry the process a step father. Put an ounce of the oil in a half pint bottle, add two ounces of gasoline and shake the bottle until the oil is dissolved by the gasoline, and then let the mixture settle. Any considerable amount of precipitation or sediment indicates the oil has been treated artificially to produce an artificial viscosity. Reject that oil.

Flashing Tests.—Get a metal cup, fill it nearly full of oil. Put the cup in a pan of sand and heat the pan of sand. Put a high grade thermometer in the oil. When the temperature reaches 300 degrees, pass a lighted match over the top of the cup. Continue that operation every few degrees until the oil flashes. Note the temperature and you have the flashing point.

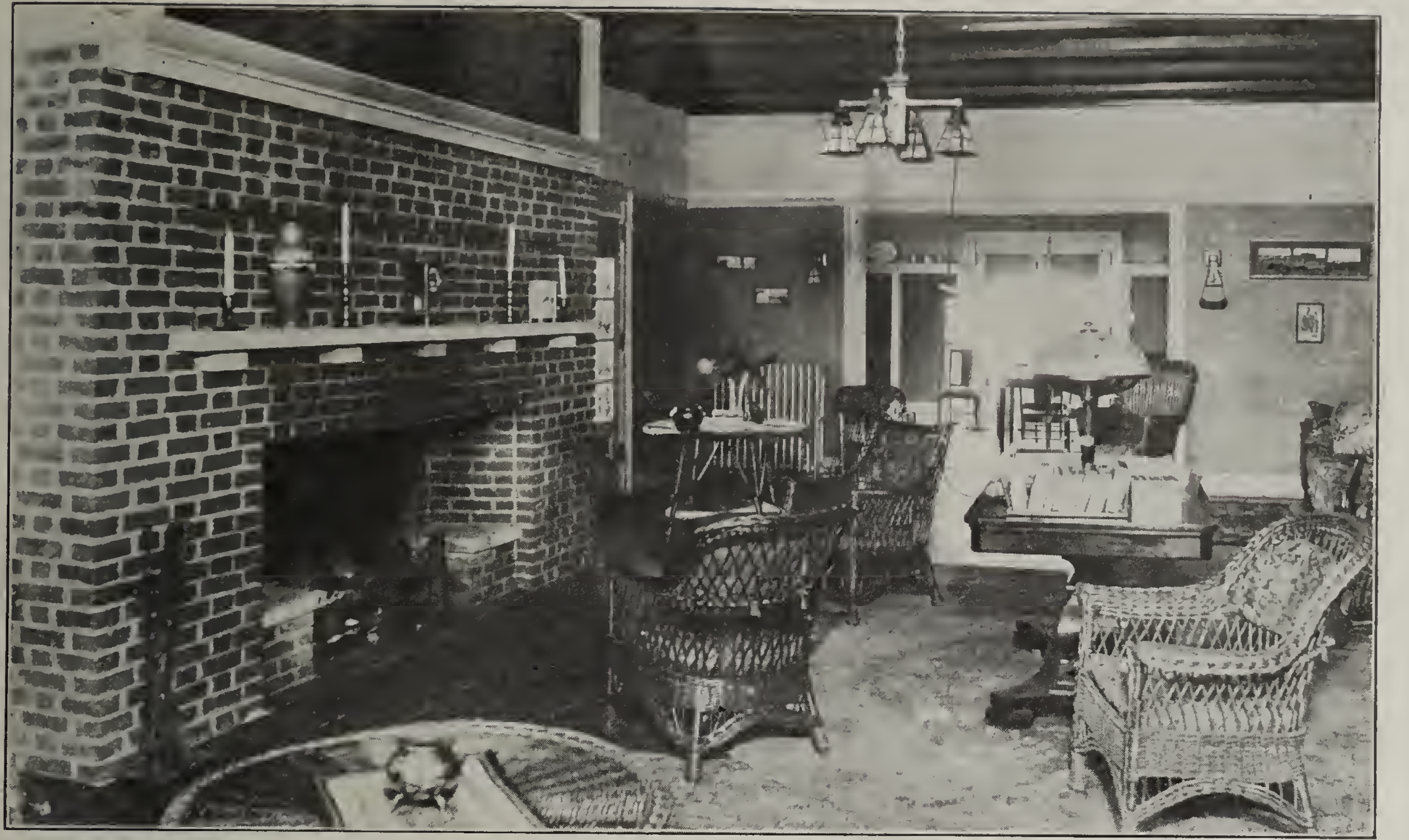
Test for Sulphur.—Heat some oil to 300 degrees in the pan of sand as you did for the flashing test. After the temperature has been kept at 300 degrees for fifteen minutes let it cool. If the sample is considerably darker after heating than before, it has sulphur in it and is unfit for use in cylinders and bearings that run hot.

In making these tests, get samples from a reputable dealer. Select the samples that seem adapted to your needs, choosing heavy oils for heavy bearings and light oils for light bearings. In the beginning it would be well to get a number of small samples. Try one for a certain length of time and then another for the same length of time. By keeping a careful record of the result you will be able to select the oil that is best suited for your machinery. Much valuable information will be obtained and a good deal of oil saved. Do not waste. If you can afford to be wasteful do not. Be economical and use your surplus to help those less fortunately situated.

After watching the waste of oil around a brick machine, I have come to the conclusion that any bearing is worth an oil cup. Some of them are not made so an oil cup can be used, but where it is possible, use an oil cup and stop the waste.

In some plants the same oil is used several times. If it can not be used for lubrication a second time, it can at least be used for making fires.

See that all oil is strained through a cloth, no matter how clear it looks. The engineer usually has plenty of time to do it, and even the clearest oil has some grit in it, and every bit of it helps to heat and wear out the bearings. Do not buy low-priced oils; they are not cheap. Pay a fair price for what you get and patronize a reputable dealer. That is the only way to get anything cheap.



Interior of Residence in Garden City, Long Island. Arthur T. Remick, Architect

Brick Fireplaces

EXCELLENT DESIGNS THAT EMPLOY PLAIN STANDARD SIZE BRICK WHERE FANCY MOULDED BRICK WOULD DETRACT FROM ARTISTIC EFFECT

By D. W. Fredericks

BURNED CLAY fireplaces are gaining favor with the wave of artistic home designing that is sweeping the country from the Great Lakes to the Gulf, not to mention Cape Cod to the Golden Gate. With the introduction of rough cast tile to correspond with matte brick, originality of design was given full play, no longer being hampered by flat surfaces that could be relieved only by classic (?) projections in smooth moulded brick.

With the disappearance of conventional ornamentation from our interior woodwork and the adoption of simple lines and more rugged effects in our plastering, the need of sturdier outlines in the fireplace grew apace. A better understanding of scale has come to the architects who plan small (or for that matter, large) houses, and, in many cases the same material is used in fireplace work as is used in the exterior walls, but in smaller units. Thus "splits"—which are brick measuring one inch by eight inches on the face—are often used in the same color and texture as the brick on the outside of the house, where the unit size is two-and-one-quarter inches by eight inches. The fireplace, being a smaller piece of brickwork than the wall planes, brings the smaller brick into better scale.

Another, and particularly pleasing small scale effect can be obtained by using "pony brick" (6 in. by 2⅞ in. by 1 in.) laid with the 6 in. by 1 in. face exposed. This gives the same effect as "Roman" brick, which are 12 in. by 1½ in. on the face, only that the scale of the work will be a quarter—that is, the brick multiples will be only one quarter as large as they would be, were the full sized brick used. Then, too, these "pony brick" can be used as tile, for panel work, as they are calculated to lay the width of two tile and one joint to the length of one tile. True it is, that these miniature brick cost fully as much as the full sized brick, and, as a consequence, the brick itself in the fireplace, will cost four times as much as it would, were full sized brick used—but the difference in dollars and cents is not nearly so great as there would be between one rug and another—and you could change the rug, but you cannot change the fireplace.

The relation of the material used in the fireplace, to the material used to face the building itself, can not be too carefully studied. Here is a chance for harmony in thought—the carrying of the constructive element of the house into the only part of the interior which is exposed to the most destructive of the "elements"—fire. There is no question but that a brick house should have brick fireplaces.

The question becomes more complicated, however, when houses are faced with field or rubble stone. Unless the room in which the fireplace is to be built, is finished with rugged outline, the field stone, in addition to being out of scale, is so rough that it strikes an inharmonious note. If it be of an uninteresting color, it is gloomy and uninviting—two attributes diametrically opposed to the spirit of the hearthstone.

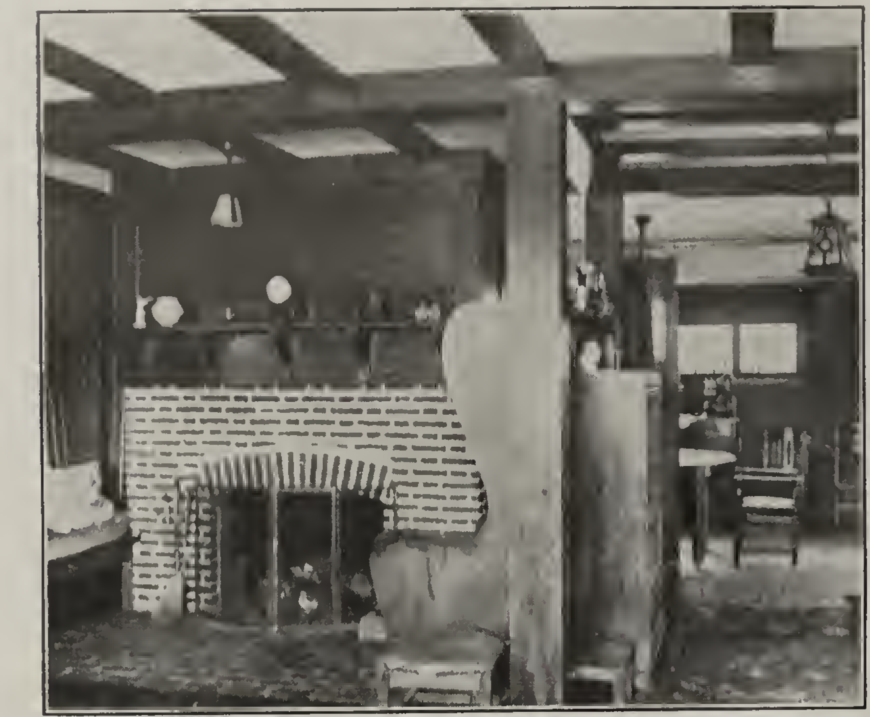


Fig. 2—Fireplace Treatment in Residence in Westchester County, N. Y. This Building Was Once an Old Stable.

In the illustrations that close this article, are seen two fireplaces of rough rubble stone that have been installed in residences in Westchester County, New York. Both, it will be seen, are relieved by panels of "Tapestry" brick and tile, laid in mortar that corresponds to the color of the stone. This combination of brick and stone is pleasing to the eye and relieves the immensity of the stone units, which, were the rooms of usual proportions, would appear awkward and pretentious.

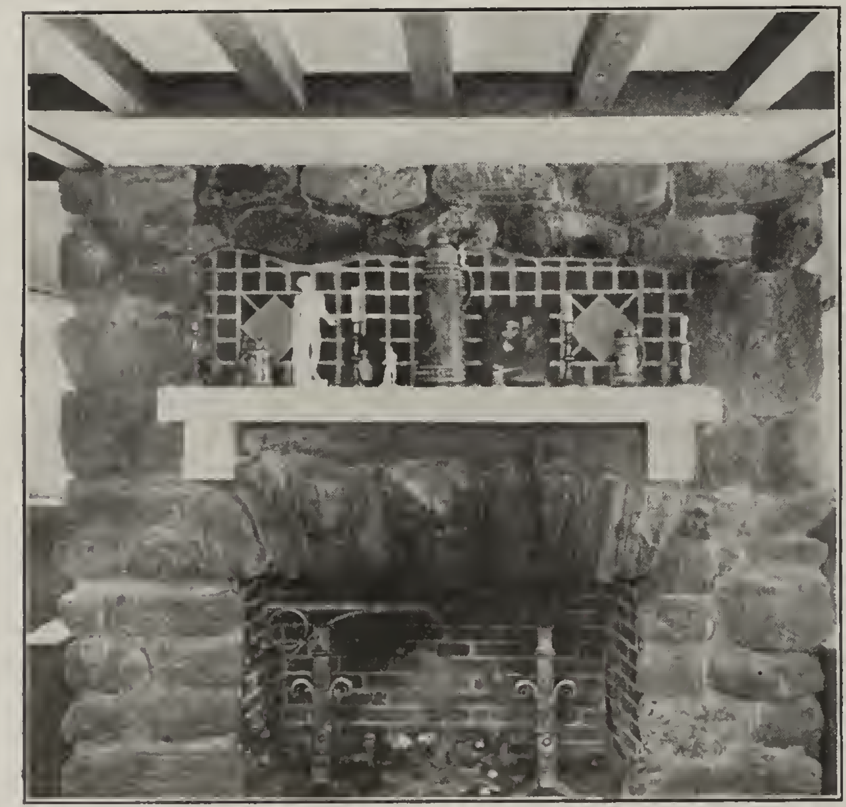


Fig. 4—Field Stone Fireplace with "Tapestry" Brick Panel.

The larger illustration, showing the interior of a residence at Garden City, L. I., shows a brick treatment that is in keeping with the size and decoration of the room. Here, the "moulded brick" ornamentation is conspicuous by its absence and a simple indented panel is the only claim that is made to outline, unless the proportions themselves be considered, in which case a balance is preserved between the fireplace and the other lines in the room, that show a profound study of detail on the part of the designer.

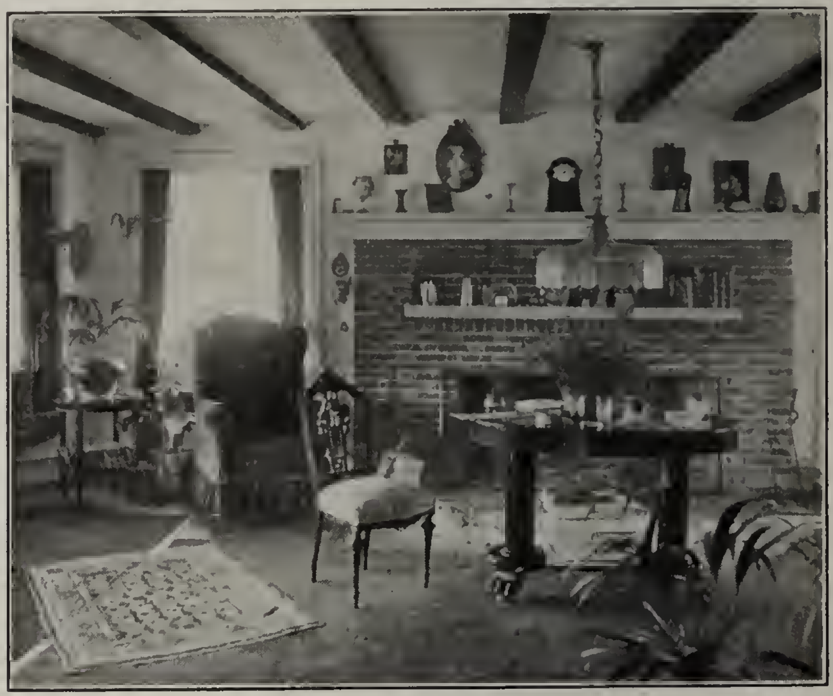


Fig. 3—Interior of Residence at Ardsley, N. Y., Showing Dignified Lines in Mantel that Conform to the General Architectural Treatment.

By a discreet use of contrasting mortar joints, the small expanse of brickwork in the mantel shown in Fig. 2 is given value and shows the designer's desire to have this fireplace dominate the small enclosure in which it is situated. The house in which this is built was formerly and old stable and the illustration shows with what success the problem was solved by a skillful architect. Fig. 3 is a fireplace in a house at Ardsley, N. Y. In this, as in the other illustrations, the absence of "moulded brick" is welcome.

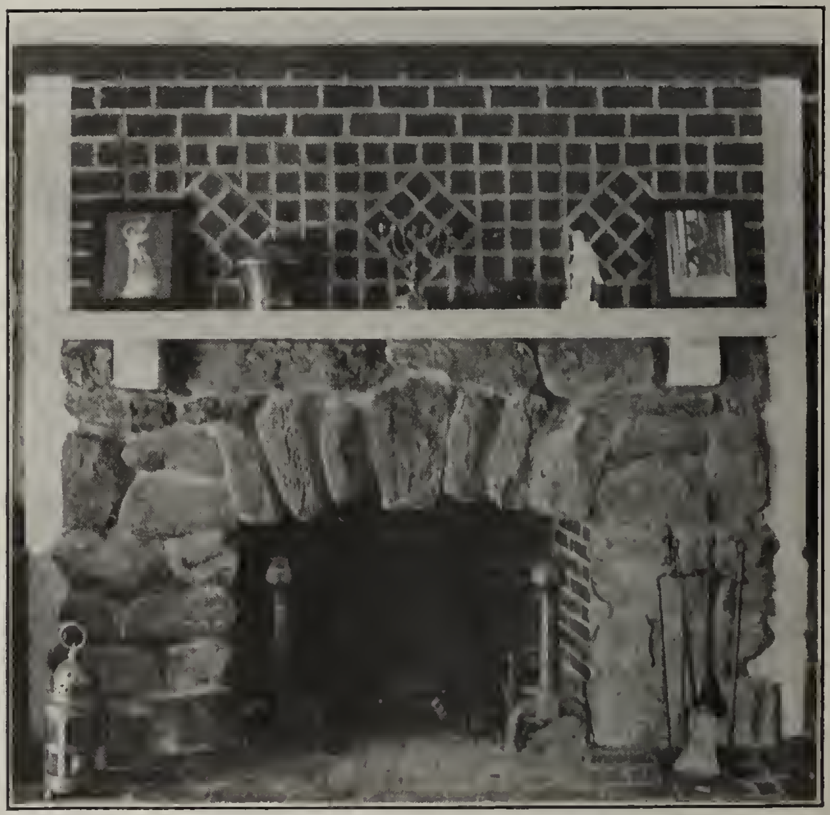


Fig. 5—Effective Brick and Stone Combination.

The fireplaces shown are all designed by Arthur T. Remick, of New York City, through whose courtesy the pictures are published.

The Continuous Kiln—How to Increase Daily Capacity 100 Per Cent.

Expert Says He Solves Problem by Manipulation of the Draft Through the Use of Blower Fans

By William A. Butler

The chief trouble in the successful operation of a continuous kiln lies in the fact that this system of burning is little understood by those who seek to exploit it. Mr. Butler has had a large and varied experience in the construction and operation of continuous kilns and ought to be qualified to teach others. He makes, however, some very strong claims and, as he says in his introductory remarks, no doubt he will be questioned as to his attitude on the subject.

UNTIL the law of draft and atmospheric pressure, and their relation to each other is fully understood, and the medium between these two elements has been definitely determined, the acme of proficiency in continuous kiln operation will be more accidental than scientifically accurate.

In this article I have established a definite point in continuous kiln operation between the draft of the stack and the pressure of the atmosphere. Since some of our worthy brothers in the clay field might venture to say that my subject matter is not "theoretically correct," I ask them to overlook any pet theories that I may attack, or unwittingly knock into an up-ended skypiece. Suffice it to say—that, as long as I have brought my ideas to a definite and practical conclusion, and made practical use of these ideas, the owner or operator of a continuous kiln will care very little as to whether my ideas are according to set rules or not.

I am going to show the "why" as well as the "how" of the continuous kiln. I will point out the correct way for those still "groping in the dark," and show those people who are not satisfied to sit back and "leave well enough alone,"—how they can actually "burn two bricks in a continuous kiln where but one was burned before."

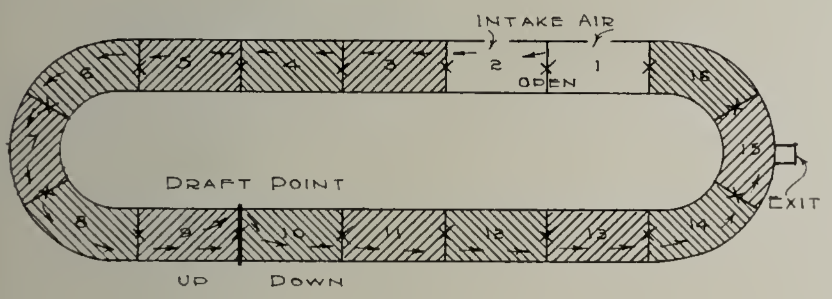


Figure 1

In commenting on the continuous kiln, one of our eminent engineers says that "no exponent of the continuous kiln ever gives more than the one hundredth part of what he has received from others." I trust that when he has read this article he will be willing to credit me with at least 50 per cent.

In the operation of the continuous kiln of the endless tunnel type there are four elements to take into consideration:

First—Draft or pull, caused by a chimney, fan or blower.

Second—Heat, caused by the combustion of the fuel.

Third—Waste heat, which represents the overplus or commercially speaking "the by-product of brick burning."

Fourth—Air of combustion or atmospheric pressure.

The draft in this case will mean the educing of the waste gases of combustion. Now, as the movement of all air and gases through the continuous kiln is caused and dominated by the draft, every current of air passing in or out of the kiln is commonly called—draft.

The clamp "open-top" kiln, with fires in the bottom, is called an up-draft kiln. The "bee-hive" or rectangular kiln, through which a chimney or fan causes the gases to move in a downward direction during the burning period, is called a "down draft kiln."

As the movement of gases in the continuous kiln are various and interchangeable, and a constantly moving factor, we cannot apply the word draft to it in a general way, as in the two previously mentioned kilns.

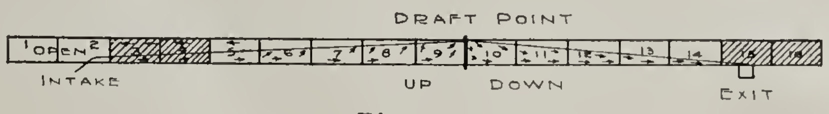


Figure 2

For the purpose of ilustrating the working of a continuous kiln according to the best method, I will divide the heating and cooling bricks into four sections—see Fig. 3, which is a longitudinal section of Fig. 1.

Again, for further illustration, I will divide the heating and cooling process into two general sections—see Fig. 4.

The dividing line between the last two sections, as shown in Fig. 4, is the exact point where the pull of the stack begins and the pressure of the atmosphere ceases, and which I will hereafter refer to as the "draft point."

The four sections or divisions of the continuous process (first referred to), passing from the open portion of the kiln to the exit draft flue, are as follows:

First Section—The section into which the cold air from the atmosphere forces its way through the continually cooling brick. The movement of the air may be called "Horizontal Draft".

Second Section—That portion between the first section and the "draft point" (Fig. 3). The full fire occurs in this section, and the greatest pressure also occurs in this section and the draft may be designated "Horizontal Up-Draft". This section may be compared to the pressure of a reservoir at that portion nearest the dam, the "draft point" representing the dam.

The third section comprises that portion of the kiln from the "draft point" to one-half the distance to the exit. This section is called the heating section, the bricks being continually heated up before the advance of the full fire.

The last section is a continuation of the third section in both of which sections the draft may be called "Down Draft Horizontal".

It is in this last section that "scumming" of the bricks

often occurs if they have not previously been scummed in the drier.

The "draft point" in the continuous kiln is regulated and maintained by the stack damper being opened or closed so that the heat or flame behind the "draft point" is *upward* when a firing cap is removed just back of this point and *downward* just in front, as shown by removing the nearest cap ahead. The "draft point" may vary in different size kilns from 6 to 12 feet in front of the first settling heat. By burning a few rounds of the kiln this point may be definitely established and accurately kept.

So simple is the operation of a continuous kiln that any ordinary brickburner may easily learn to operate and keep it under control, *but it requires a still greater knowledge to further advance the fires and increase the output of a continuous kiln,* and still preserve the "draft point" at the proper distance in front of the full fire.

Opening the stack damper will move the draft point further back or eliminate it entirely, and so be to the detriment of a good burn. That would constitute the "hit and miss" method or "rule of thumb" brick-burning.

People who insist on burning the continuous kiln all "down draft" had better stick to "down draft" kilns and leave the continuous to someone else.

To advance the fires and increase the daily capacity of a continuous kiln one must know the "why" as well as the "how." He must understand the underlying principles.

Now, what are the underlying principles and how may we employ them to increase our output?

The movement of gases through the kiln is caused by the draft. The stack damper which regulates the "pull" or draft is opened so that a vacuum is produced in the heating up of the third and fourth sections of the kiln. The atmospheric pressure through sections 1 and 2 follows in the wake of the vacuum, pushing the gases ahead to the "draft point." It can be seen, then, that our four sections comprise two parts of two sections each, viz.: Two sections in the *draft* or *eduction* portion, and two sections in the *atmospheric pressure* portion.

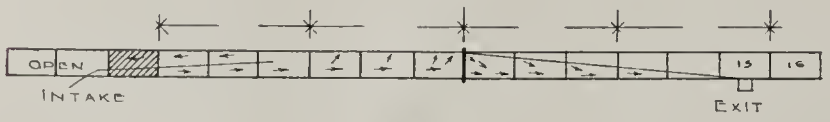


Figure 3

Having thus analyzed our draft as one-half "pull" and the other half "push," we know at once how to advance the fires, and that is to use more coal and burn more brick in proportion, still maintaining our "draft point."

For every increase of draft in front we must correspondingly increase the pressure from the atmosphere. It will be noticed in ordinary Hoffman kilns that in the open portion of the kiln where the brick are being removed there are two separate and distinct movements of air. First, we find the cold air from the outside entering through the open doorway and moving at the floor level. This can be seen by the dust as well as felt by placing the hand over the small openings in the lower benches of the burned brick. Besides this entering cool air, which moves forward in the lower part of the kiln, there is a return hot air current in the upper portion of the kiln from the burned brick. There are times in this kiln when the heat comes back so strong that the wheelers and "takers out" stop work to permit the kiln to cool.

This is waste heat—unused and actually doing damage—as anything that holds back the progress of a machine or kiln without giving its equivalent in something else in return is absolutely a detriment. This heat, coming back in the upper portion of the kiln, crowds the entering air to such an extent that the "push" or atmospheric pressure is often less than one-half of what it should be. The result is a 50 per cent loss.

The capacity of the kiln is regulated by the amount of coal that can be burned up clean while the "draft point" is properly maintained. This amount of fuel may be increased or diminished by the amount of "push" and "pull" maintained in the kiln. I proved this to my own satisfaction years ago. Operating a continuous kiln in a windy district, I placed a movable shield that would deflect the breeze into the kiln. Besides cooling the kiln more rapidly, the fires were accelerated, more coal was burned and the "settling" advanced to double as long as the draft moved in the *direction of the wind.*

Up to this time I believed that the only way to operate a Hoffman kiln was simply to regulate the draft and let the kiln "take its own time." Experts said that the waste heat was necessary for the proper working of the kiln and any attempt to remove this waste heat would interfere with the draft and spoil the brick.

Still, I noticed some of the "doubting Thomases" were trying to use the waste heat by opening the damper in the lower portion of the kiln. This, of course, will draw the entering air and interferes with the draft. The waste heat is on the top or upper portion of the kiln and should be removed at the highest possible point through a flue or flues of as large a sectional area as is practicable.

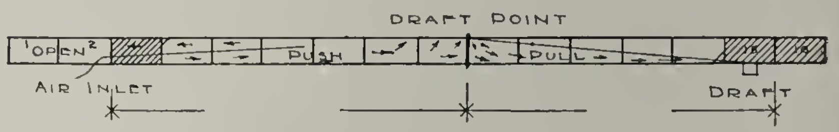


Figure 4

The waste heat so detrimental in the back portion of the kiln, if used in the front portion of the kiln in advance of the fires, will overcome the tendency of scumming the brick, besides heating them up to stand more rapid burning.

When there is nothing hindering the incoming air the atmospheric pressure is increased proportionately and the fires will advance more rapidly. The best method, therefore, of increasing the capacity of a continuous kiln is:

First—To provide for a watersmoking flue of ample capacity for the withdrawing of waste heat from the burned bricks and causing the heat to pass through the green bricks.

Second—To provide for an air blast to increase the pressure from the open portion of the kiln towards the full fire.

In a district where the brick have no tendency to scum, a blast of air in the open portion of the kiln, of a capacity proportionate to the area of the tunnel, will cause one horizontal movement of air towards the fire and accelerate combustion two-fold, easily doubling the capacity of the kiln. The pressure from the blast may be increased until the stack has been opened to its full capacity while the "draft point" is constant. A fan in place of the stack will make the kiln independent of weather conditions and when the "draft point" is properly located and maintained, the two fans may be regulated and set to a speed that need not be changed from one year to another.

The rate of progress during the burning of the ordinary Hoffman kiln is some 112 feet per week. With the new draft and pressure system the burning may be advanced to from 150 to 250 feet per week.

exit flue may be used to good advantage in a radiation type

The increased amount of heat leaving the kiln through the of drier.

It might not be inopportune to mention right here one especial advantage that the fan or blower has over the tall chimney. In the starting up of a continuous kiln, or, for that matter, any other kind of kiln where the chimney and flues are cold, not having been used in some time, the draft may be found to be good before the fires are started. Immediately after the fires are started the draft ceases and the flues are filled with heavy carbonic acid gas, which blocks the way until it is either removed or until the heat of the kiln is strong enough, with the aid of the atmospheric pressure, to set it in motion. With the fan draft the difference in the height between the kiln floor and the fan is so little that the cold carbonic acid is drawn off as easily as if it were ordinary air.

In a well-known make of down-draft kiln that we see advertised, we notice two fireboxes in the chimney. When carbonic acid lies "dead" in the flues leading to the chimney the firing up of these furnaces sends a column of heat up the chimney and the vacuum formed in the bottom lifts the carbonic acid out of the tunnels and causes the draft to move.

If a continuous kiln be dried off and water-smoked "up draft" before the chimney is opened so that no cold carbonic acid can collect in the ducts, there will be no stoppage of the "draft" or loss of time. In starting up the continuous kiln in the windy country previously mentioned there was no stoppage of the "draft," as the strong wind carried off the cold heavy gas faster than it could form in the tunnels leading to the stack. Thus it will be seen that a condition which is a drawback in some places may be a blessing in others.

Takes Over Underwood Burning System

Manufacturers Equipment Company, of Dayton, Ohio, Adds Weight of its Reputation to Revolutionary System of Burning Brick and other Clay Ware by Producer Gas.

In the last issue of "Brick and Clay Record" an announcement was made of a new system of burning that had been invented by John T. Underwood, of Detroit, Mich. We now describe how this system was subjected to the closest investigation by a company which enjoys an enviable reputation among clayworkers, and, the opinions of many authorities having been obtained, how this company decided to give the craft the benefit of a wide-spread publicity for the system, that the waste of fuel, time, labor and spoiled ware might become a memory.

CLAYWORKERS who have watched the progress of the industry during the past three years, giving due thought to the practical side of the craft, realize that the many revolutionary ideas that have been transformed into labor-saving and cost-economizing devices, have been made of real value through being financed and developed in the shops of various clayworking machinery manufacturers.

Among these, none have been more progressive—more willing to add the magic of capital and experience—than the Manufacturers Equipment Company, of Dayton, Ohio.

Organized in October, 1910, to carry on a general business affiliated with the clayworking industry, furthering installations of the Justice Radiated Heat, Metal Radiation and Waste Heat Dryers, which, by the way, were well and favorably known with the clay trade, and, after a very full and complete investigation, taking on, in a selling capacity, the line of machinery built by the J. D. Fate Company, of Plymouth, Ohio, and the Ellwood dry-press brickmaking machinery, manufactured by the Chicago Brick Machinery Company, the Manufacturers Equipment Company started to do business with a particularly complete equipment in the way of a selling line.

The personnel of its directorate made for instant success. J. L. Schroll, the president, I. M. Justice, vice-president and H. G. Mattern, general manager, were all familiar names to the clayworking craft. W. H. Sachs, the secretary and E. M. Mahlmeister, the treasurer, have since built up a host of friends among the men who are transforming clay and shale into imperishable building materials and high grade sewer-pipe and drain tile.

With such men, and ample capital, it is no wonder that a clientele has been established that dots the map from Coast to Coast and Lake to Gulf, and includes patrons in foreign countries and dependencies, including Canada, Cuba and the Latin-American republics.

In this day and age, when progress is essential to success, the Manufacturers Equipment Company has spared no expense in rounding out its lines of machines and accessories for the clayworker, investing in, and developing methods that would have lain unused for years, had it not been for the spirit of open-handedness it displayed. Keeping a sharp lookout along the frontiers of the industry to which its services were given, it has found many things of value to the clayworker, and has passed upon their relative merits with a judgment ripened by long experience—experience that has been obtained not only in the manufacturing of equipment, but through actual work in clayworking plants, making, drying and burning clay products.

Every one connected with the manufacture of brick and kindred material knows that the "problem of the plant" is proper and economical burning. Little can be done to improve the ware or decrease the cost until after the brick are dried. From that point to the time the kilns are drawn, waste is apparent—waste in badly burned ware—waste in fuel—waste in time and labor.

So with this thought in mind, the Manufacturers Equipment Company gave a willing ear to the claims made by John T. Underwood, of Detroit, Mich., when the plan of his producer-gas system first came to its notice. The plan was so radical, however, and the claims so broad, that the opinions and advice of many men of authority in the clayworking field were sought and obtained, before it was felt safe and proper to launch this truly epoch-making plan on the market.

Following this investigation and an even more exhaustive one that was inaugurated by "Brick & Clay Record," the report of which was given in the Oct. 21 issue of this journal, the Manufacturers Equipment Company completed negotiations with Mr. Underwood that resulted in its assuming the sale of the right to use the devices which Mr. Underwood had patented, and of overseeing their installation in clayworking plants in the United States and Canada.

1
J. L. Schroll

2
I. M. Justice

3
W. H. Sachs

4
H. G. Mattern

5
E. M. Mahlmeister

A campaign of publicity is being planned, which will include the various specialized journals that interest clayworkers, and items of news interest for the public press, as well as descriptive literature for distribution. Anticipating many inquiries from the publicity already given the system, facility for the prompt demonstration of the superiority claimed of this system is being prepared, so that no unforeseen incident may cause delay or dissatisfaction.

Readers of "Brick and Clay Record" will do well to turn back to their files and read the story of the Underwood process. It does not mean a dismantling of the yard, nor the tearing down of any kiln that is doing good work. For a surprisingly low cost, the kilns now standing—scove, up-draft, down-draft or continuous—can be so altered as to allow the use of producer-gas under such conditions and control as to make this process of burning a marvel of effectiveness. It means a harder-burned product, a more evenly-burned product, a greater proportion of first-quality brick or other ware than you have been obtaining, a shorter burning time, which will enable you to turn your kilns that much faster (and so increase your capacity) and the substitution of cheaper grades of fuel than those you have been using —incidentally giving you more heat units applied to burning your ware, than you were able to apply with better grades of fuel at much higher prices.

It will do all of that. If you doubt that statement—cut it in half—say: "If it does half that!" What then? Would it not be well worth your careful investigation?

N. B. M. A. MEETING PLACE IN DOUBT.

Contrary to Precedent, Executive Committee Submits Question to Membership at Large.

Buffalo may not be the next meeting place of the National Brick Manufacturers' Association after all, the executive committee having decided to upset precedent and, instead of taking the responsibility of naming the convention city as always has been the custom, it will let the membership make the selection.

In accordance with this idea Secretary Randall sent out a circular letter under date of Oct. 28 and asked each member of the Association to send him an expression of preference. A ballot form was enclosed in the letter, this having the names of the various cities that have bid for the convention. These are: Atlantic City, N. J.; Baltimore, Md.; Buffalo, N. Y.; Chattanooga, Tenn.; Indianapolis, Ind.; Kansas City, Mo.; Milwaukee, Wis.; Nashville, Tenn.; Pittsburgh, Pa.; New Orleans, La.; Richmond, Va., and St. Louis, Mo.

The Southern cities are putting up the stiffest fight for the convention. Representatives from New Orleans and Birmingham were present at the last convention and urged the members of the executive committee to select their cities for 1914. Since, Birmingham has dropped out, but Chattanooga and Nashville are taking an active interest in the matter. New Orleans, however, is making the greatest effort. Fritz Salmen, of the Salmen Brick Company, New Orleans, not only pleaded the cause of the Crescent City at the Chicago convention, but also was present at the recent Cleveland convention of the N. P. B. M. A., and was a live booster. Again, a few days ago, Mr. Salmen issued a circular letter and addressed it to the members of the Association telling them what an excellent place New Orleans would make for the next convention and put his proposition in such an alluring way that it is hard to see how anyone can resist the appeal.

Indianapolis, Ind., has also made a strong plea for recognition.

CAR SHORTAGE MAY BE AVOIDED.

Interstate Commerce Commission Urges Shippers and Carriers Give Close Attention to Unloading.

The fact that a car shortage impends in many shipping districts and that informal complaints have been made to the Interstate Commerce Commission, has led the Commission to issue a bulletin urging all shippers and carriers to give closer attention to the methods of loading, unloading, moving and promptly returning to use, the cars that are now available; this, it is claimed, will go far toward making the present car supply sufficient for all purposes.

In order that the business of the country may go forward without interruption, the Commission urges shippers, both individually and through their associations, to co-operate to secure the prompt and full loading of cars and their prompt release. One of the chief causes of failure of car supply in past seasons has been the unnecessary detention of cars by careless shippers and by shippers using them for storage purposes. In the general public interest, shippers should endeavor to release cars at the earliest possible moment without regard to the free time given by the tariffs.

All the efforts of the shippers will be unavailing, however, unless the carriers also use extraordinary measures to eliminate all delays chargeable to them. The failure of car supply is usually a failure of car movement. The congestion of terminals is the ever present feature at times of such failure. The Commission therefore urges carriers to make every possible endeavor to improve their methods of operation of terminals in order that cars may move promptly. Also company material should be unloaded with the same despatch that is required of shippers.

The Commission is moved to make this appeal by its desire to save both shippers and carriers from the losses which are occasioned by failures of car supply, and by its knowledge that measures such as are here suggested have operated in past seasons to save all concerned from heavy losses.

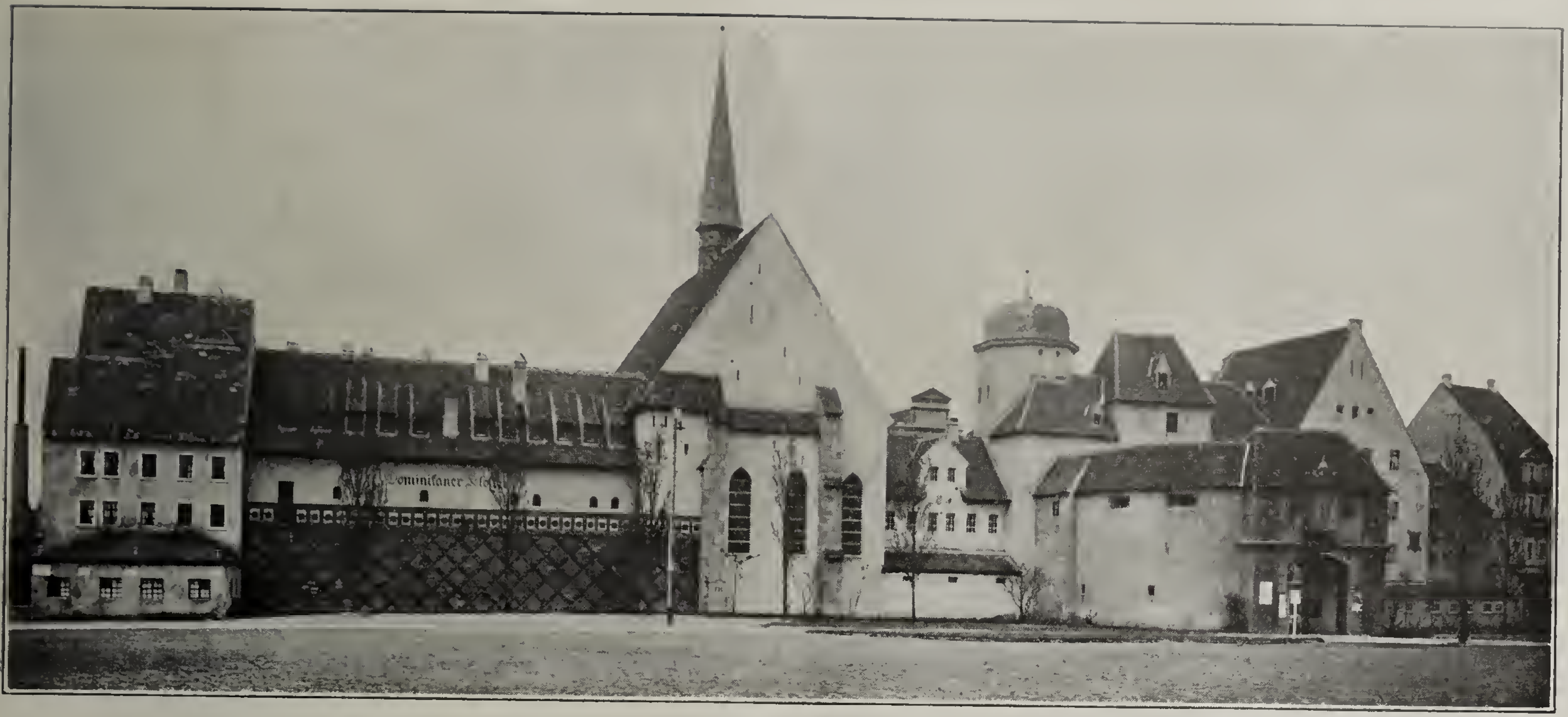


Fig. 1—Leipzig as it Looked One Hundred Years Ago

The Leipzig Exposition

INTERNATIONAL BUILDING EXHIBITION HELD IN CITY OF ANCIENT CLAY IS A PICTURE STUDY OF THE NEW AND OLD

This is the first of a series of articles by Mr. Garve on the International Building Exhibition at Leipzig, Germany. Mr. Garve made copious notes on his recent visit for the purpose of supplying this journal with an instructive as well as an interesting review of the exposition.

By T. W. Garve

THE International Building Exhibition in Leipzig has brought that city to the foreground and it doubtless has a right to be there and—to remain there.

Leipzig is an old town and has an interesting and remarkable history. Except being centrally located in northern Europe, Nature has given it no special privileges and it, therefore, must speak well for the spirit of this city when the facts are stated that Leipzig is today one of the most modern and enterprising cities of Europe; that it is the most important commercial city in Germany next to Hamburg; that it is one of the most prominent literary and musical centers in Europe; that its fairs for merchandise are the largest in the world, visited regularly by merchants from all over the globe, and that to mention only one trade—of bookselling and publishing—it occupies a unique position, not only taking the first place in Germany, but even surpassing London and Paris in the number and total value of its sales.

These are a few facts about modern Leipzig, but before it developed to what it now is, it had to pass through times of hardship, through ups and downs, making history written with steel in blood.

Leipzig is first mentioned in the beginning of the eleventh century, when it was a fortified place. In 1134 Conrad of Wettin, margrave of Meissen, took possession and under the care and foresight of the following margraves it developed into a flourishing city. In the twelfth century it had about 6000 inhabitants and in the 15th century it was one of the most important commercial cities in Germany. Here, in the "Pleissenburg," the famous dispute between Dr. Luther and Dr. Eck took place. In 1547 the town was besieged and the suburbs burned. During the Thirty Years' War it suffered six sieges and was four times occupied by hostile troops. Also the Seven Years' War had its influence upon the city, interrupting greatly its commerce. The severity of the censorship of Frankfort-on-the-Main caused the emigration of many book-dealers to Leipzig. In 1813 and 1814 the city suffered greatly and it was during this period when bloody history was written, written upon the walls and in the surrounding fertile plains of Leipzig. In October, 1813, the great battle of the Nations ("Voelkerschlacht") between Napoleon and the allied forces of Russia, Germany and Austria was fought and the tyrany of Napoleon brought to an end.

It is this city, or the character of this city of 1813 which our pictures represent and which are remarkably well reproduced on the exhibition grounds near the main entrance. The whole original city was larger of course, since it would have been superfluous to repeat too many buildings of the same appearance; the three famous town gates with their surroundings and historical buildings are all shown, however, and the impression we get is per-

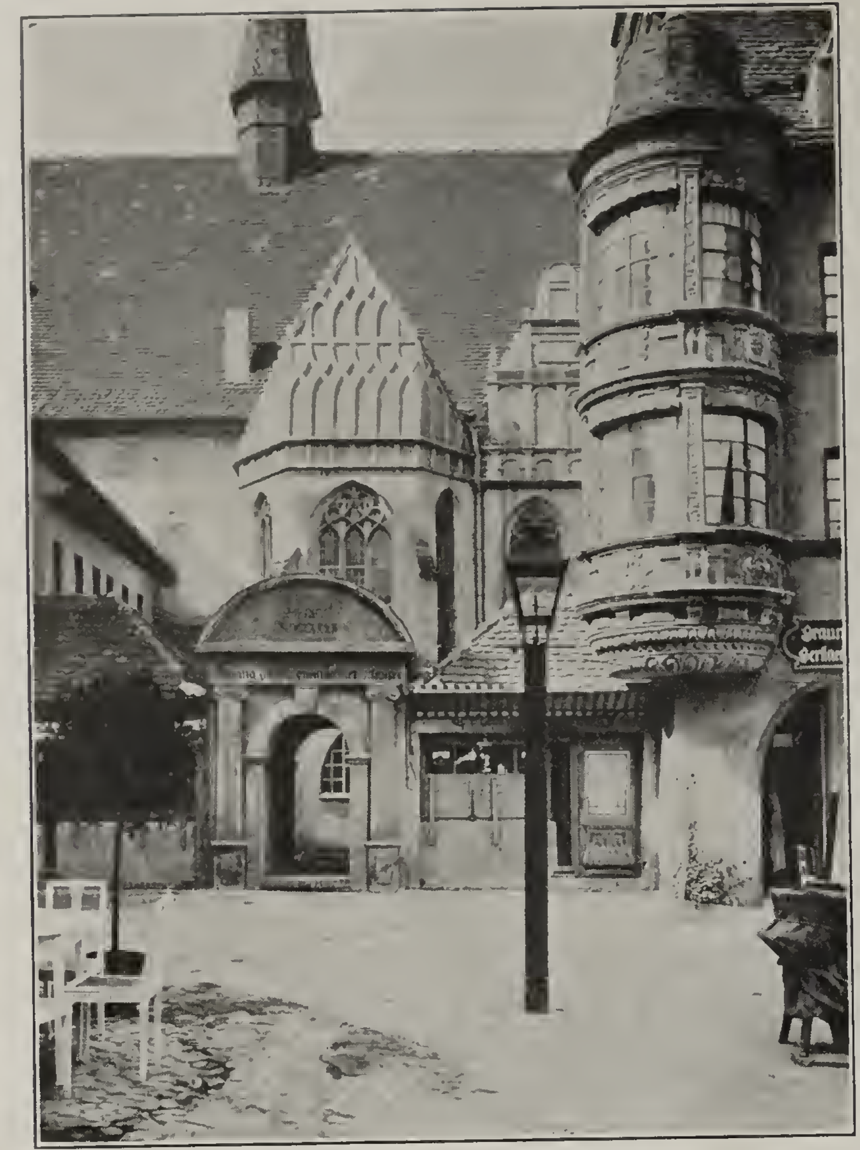


Fig. 3—Corner Balconies of the Fuerstenhaus.

fectly true and historical. It certainly is a good idea to show in a building exhibition of a city of 1913 its forerunner of 100 years ago. It invites comparison. Is it possible that we have a city of only one hundred years ago before us? Is it possible that only one hundred years of peaceful work, that only three generations could have created such remarkable changes? What a rapid and wonderful development of the building industry!

We cannot help feeling somewhat strange and bewildered in looking over these pictures, especially the first one showing the outside or profile of the town. Small buildings of low ceilings and little windows cowering close together for protection. Of course it could not be else. The towns of those days were built against enemies. The heavier the walls and the smaller the windows the safer they were. The walls were laid up in brick, plastered on the inside and outside. While northern Germany has more face brick buildings, we find in this part of the country, up to the present day, the predominence of the plastered or stucco wall.

A deep ditch and a heavy wall around the town did not allow any increase in size, and made narrow streets and small roomed houses necessary. Even now, in glancing over the city map of modern Leipzig the old ditch can be located and the size of old Leipzig be determined. The former has been dissolved into beautiful park spots inside of which the streets are still narrow and irregular. It can readily be seen that cities like Leipzig had some hard and expensive problems to solve for their perfect modernization.

And yet, in looking over our pictures again, in spite of all their shyness and simplicity there is a certain air of artistic temperament expressed as we always feel impressed by things that are not overbearing, that are true and fit their purpose. In glancing over the first picture, the profile of the town with the east gate in front, we must admit that it is picturesque, certainly picturesque. It is the whole formation or the relation of the different buildings to each other and the emphasis of the roof which are creating such effects. The roofing tiles are of burned clay—there could hardly be thought of any other material simpler, more beautiful and more effective. These roofing tiles are flat and have projections for grasping the purlins. They were laid overlapping and with their joints broken. The little towers, we see, are covered with slate.

Modern architects are inclined to forget that the roof is a part of a building and even the most essential part, according to Benjamin Franklin. Any average building, if it has an accentuated roof, will appeal to us. We must see the roof, it plays too important a role to be hidden.

While on its outer face the town appears plain and carries no artistic detail work, it has a whole lot of fine artistic treatment on the inside, some details of remarkable beauty and fine design. Look at the beautiful terra cotta work on the corner balconies of the "Fuerstenhaus"—they must have housed some cozy rooms. These balconies appear on the accompanying pictures, Fig. 1 and Fig. 3. Look at the treatment the door in Fig. 4 has received. The simplicity of the building walls seems almost intentioned to bring out the beauty of this entrance. It is the entrance to a restaurant or "Schankstube." We see the old emblem above the door, the triangle on its point and the triangle on its base being the symbols for fire and water. The combination, in this instance called wine, can be obtained on the inside. Fig. 5 puts us behind the east gate, in the fore-court between the outer and the inner gate, where in times of war the inrushing enemies received a welcome of missles from the balcony above before they could proceed through the second narrow gate. Two soldiers of anno 1813 and two girls of 1913 do their part in making this picture still more attractive.

In comparing this picture with the outside view of the outer gate in the illustration that heads this article and the inside view of the inner gate of Fig. 2, we can readily see the plan and layout of this important part of the old city.

The Dominican Cloister shown in the first illustration is partly faced with glazed tiles of fine colors, otherwise there is, as stated, no treatment in details. The outer walls were looked upon by enemies. They had to face a town cold and defiant. But what a different thing on the inside! There is fine architecture, artistic taste expressed in almost all corners, there are places so inviting and

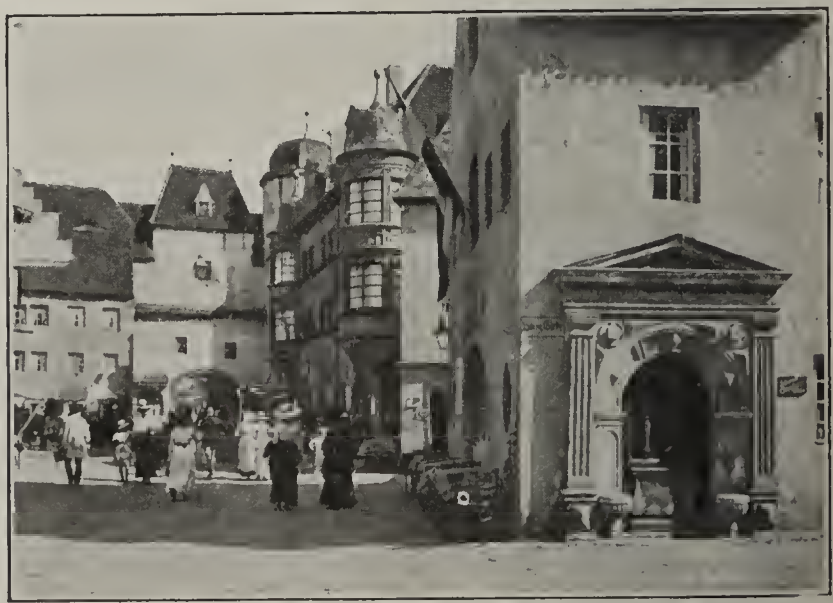


Fig. 2—Showing Inner Gate to Old City.

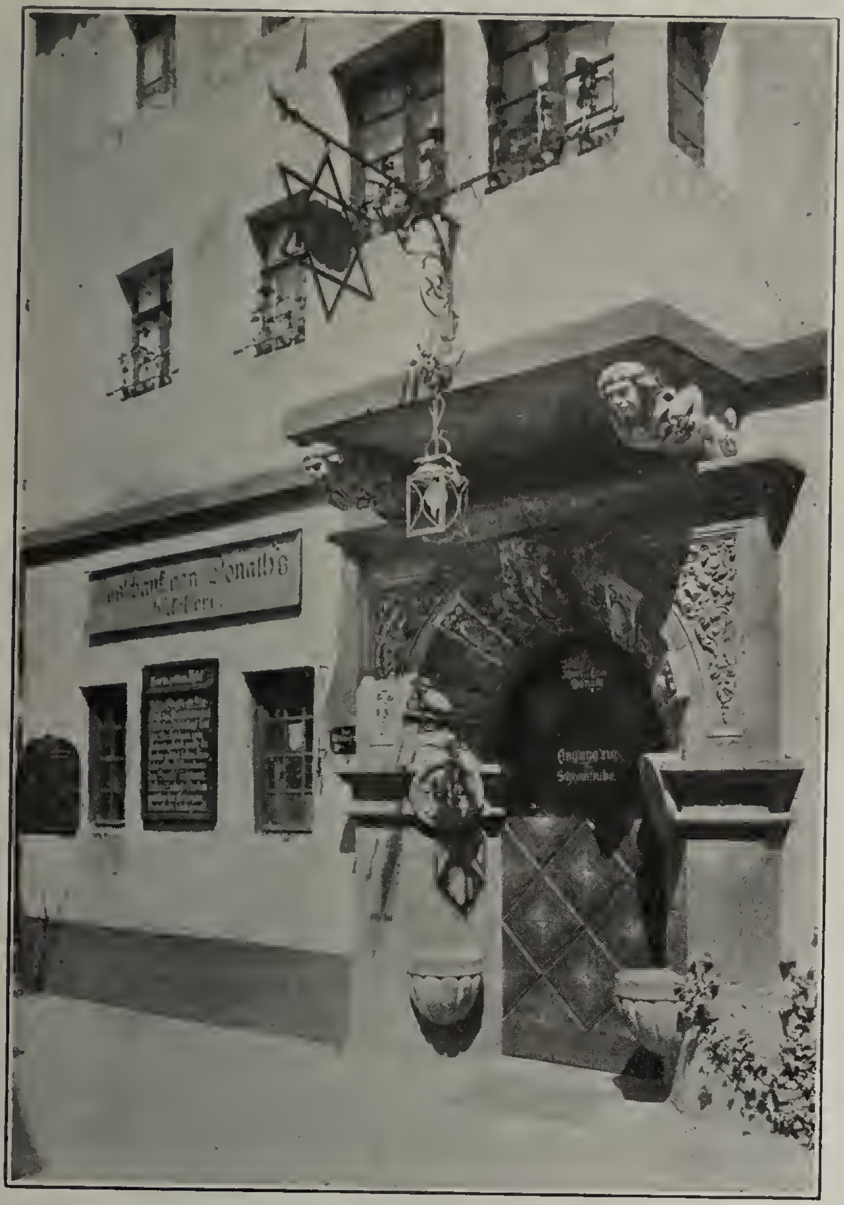


Fig. 4—One of the Doors of the "Schankstube"

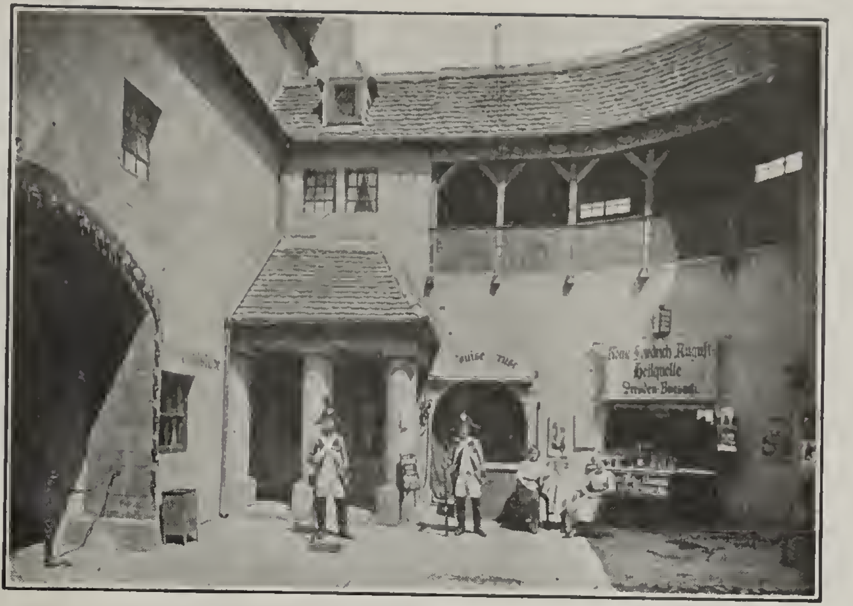


Fig. 5—In the Forecourt Between the Outer and Inner Gate.

tempting that it would be impossible not to look on and to stay, there are rooms that could hardly be thought of being cosier, there are places where in times of peace great authors wrote, composers worked and poets dreamed.

Are You Taking Advantage

Of the Question and Answer Department, the Free Service Bureau of the Brick and Clay Record? They are at your beck and call.

ILLINOIS STUDENTS HEAD LISTS.

Pass Civil Service Examinations Without Single Flunk and Receive Government Appointments.

M. R. Hornung, a graduate of the University of Illinois, was appointed assistant in Ceramics in the Pittsburgh laboratories of the United States Bureau of Standards. Three Illinois students took the Civil Service examination held last June—C. C. Rand, M. R. Hornung and W. L. Howat. All three passed and were the only aspirants, among a large number who took the examination, to receive sufficiently high ratings to be placed on the eligible list. Mr. Rand declined a position with the Bureau of Standards, to accept an appointment as assistant in Ceramics at the University of Illinois. Eight Illinois students have taken the Civil service examinations at various times and in no case has one of these men failed. In every case, where Illinois students have entered, they, or one of their number, has had the honor of standing highest on the list for that examination.

Income Tax Hits Kansas Clayworker.

W. S. Dickey, of the W. S. Dickey Clay Manufacturing Company, of Kansas City, Mo., will contribute the tidy sum of $18,000 annually toward the expenses of running the government, if the statement which recently appeared in a Kansas City newspaper be true. In a list of Kansas City residents whose incomes were more than $40,000, Mr. Dickey's name appeared third—only two other men being credited with a larger income. The amount opposite Mr. Dickey's name was $300,000—a very comfortable annual income, which the Underwood-Simmons law taxes at 6 per cent.

CRITICIZES AMERICAN BUILDINGS.

Insurance President Says American Houses Are Brick Shells with Wooden Houses Inside.

In England there are comparatively few fires. For this reason, the insurance rates there are about half what fire protection costs here, says the "American Contractor." The reason for the small percentage of fires in England has been attributed to the character of its buildings and the manner in which they have been built, to the character of the people and to the climate. There are few brick buildings in England that are not fireproof. Even the humble cottage along the country road will often be found better protected against destruction by fire than many of the large business buildings in this country.

Summing up American buildings, the president of one of the leading fire insurance companies of London said, a few years ago, that they were "brick shells with wooden buildings inside."

Interiors of most English houses are of the same material as the exteriors. If the outside of a building be of brick, then the inner walls will be of brick. If, on the other hand, the outer walls are stucco or plaster, then the inner walls will be of plaster as well. Wood is used but sparingly.

Because of the construction and substance of English buildings, fire does not gain much headway—the buildings do not burn rapidly, and most fires are put out before the arrival of the firemen. General conflagrations are almost unknown, even though, in one instance noted, a town of 8,000 inhabitants has its only fire apparatus in an "engine" that dates from the day of George III.

How Architectural Terra Cotta Is Made

Being a General Treatise on the Subject, with Methods of Manufacture, Machinery in Use and a Classification of the Clays*

This branch of the clay product industry is rapidly forging to the front and the clayworker who is seeking a new field for his endeavors will find a profitable source of investigation therein. Mr. Heubach takes up the manufacturing methods and processes and gives the A. B. C. of the same, so that he who is on knowledge bent will get a satisfying array of facts and information. This article is an abstract from a more pretentious one by the author in "Tonindustrie Zeitung."

By A. Heubach

Simultaneously, with the development of steel construction in modern buildings, the terra cotta industry in the United States has grown in a wonderful manner. The unlimited decorative possibilities of terra cotta make it the most ideal of facing materials for structures of this type. An idea of the enormous amount of this material that enters into the construction of one of the modern skyscrapers can be realized from the statement that in the Woolworth Building 8,000 tons were used, while in the New York Central Station the figure reached 12,000 tons.

The clays used in the manufacture of terra cotta might be classified along with those used in the production of stoneware, most of them vitrifying at cone 9-10 and some at temperatures considerably lower. Some of the impure fire clays are also used in this connection.

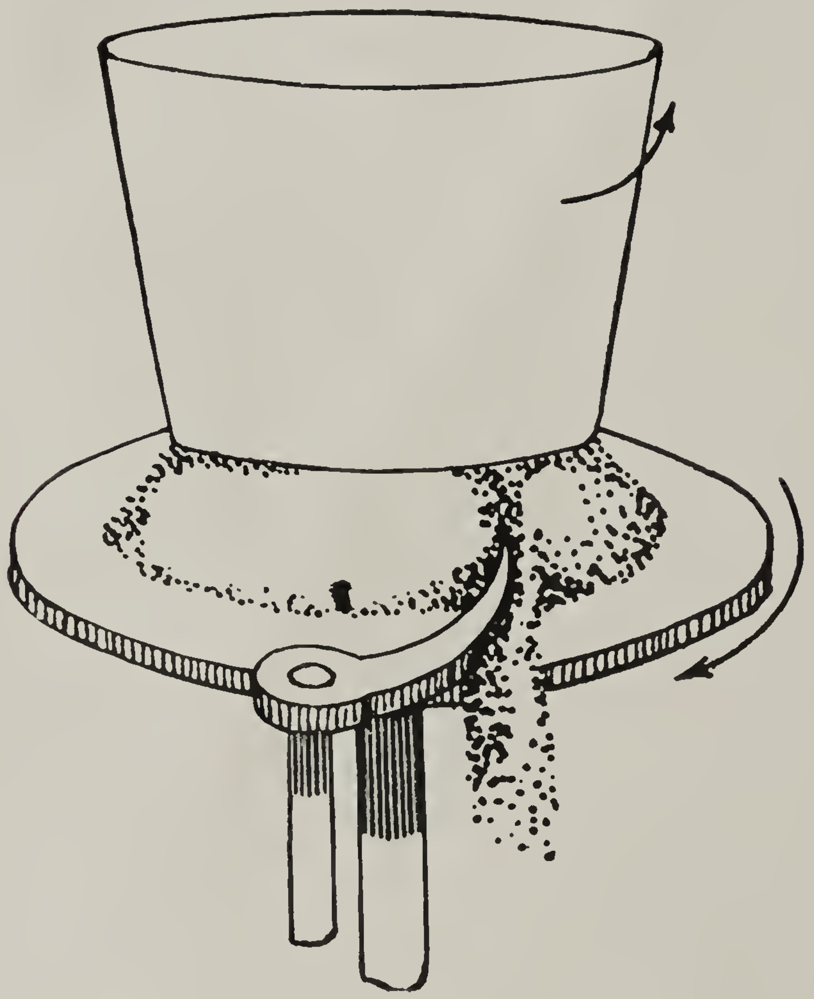


Fig. 1.

The main points to be considered in the adaptability of a clay for the manufacture of terra cotta are its working properties, its drying and burning behavior, and its maturing temperature. Furthermore, the content of soluble salts should be as low as possible. The burning color is of importance only in that it should not be too dark, the color varying between yellowish white and brown. Exceptions to these are the red burning clays used for special purposes. Since it is seldom that all clays possess all the required properties, a mixture of two or more clays is almost always used, as is frequently the case in other lines of the ceramic industry.

Inasmuch as the finished ware must correspond to specified dimensions, it is evident that the drying and burning shrinkage of the clay must be under close control. Provision must be provided, furthermore, against warping and twisting. This is accomplished by use of grog. For this purpose, burned clay is used so long as it possesses necessary refractoriness, the most common material used being old fire brick, gas retorts, sagger scraps, and the like. Only in the most extreme cases is clay burned especially for this use. In the selection of the material to be used as grog, care must be taken, since large amounts of sulphur compounds are frequently present which naturally would exert a harmful effect under the oxidizing fire of a terra cotta kiln.

Plants located in the neighborhood of stoneware factories use their scrap products for grog, which indeed are to be preferred to most other materials for this purpose. Plants obviously also use their own scrap terra cotta in this connection. The preparation of the clay is in some plants a very simple process. The raw clay and the material to be used for grog are measured in

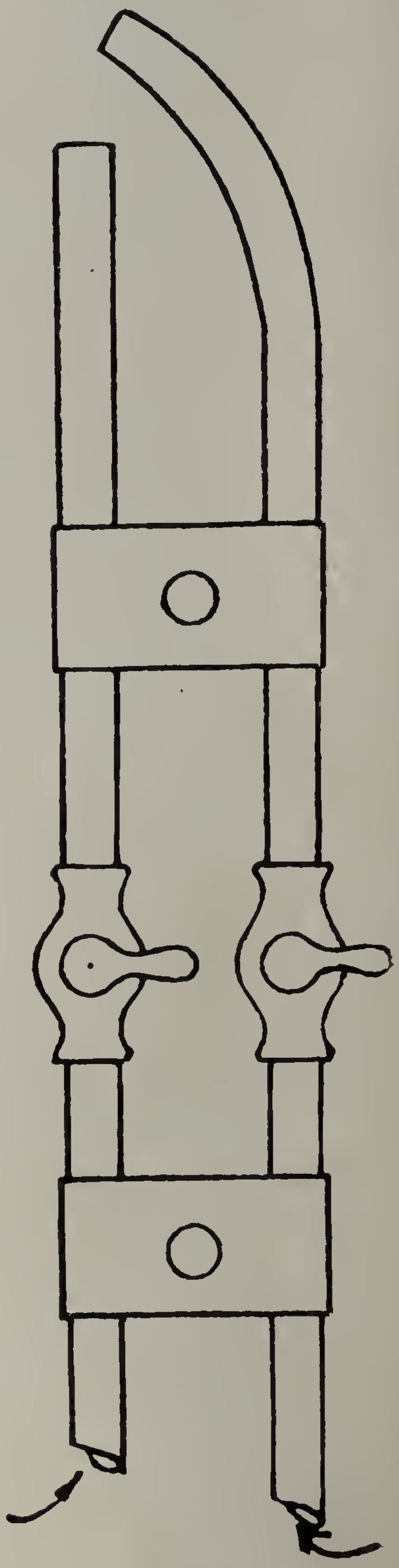


Fig. 2.

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*Abstract from an article by A. Heubach, in "Tonindustrie Zeitung."

wheel-barrows, in the desired proportions. Grinding takes place in a dry pan, from which the material is elevated to screens, the screened product falling into a pug mill, where it is mixed to the desired consistency with water.

That such a simple method of preparation is very uncertain and inaccurate, is evident, considering the fact that a wheelbarrow holds more or less material depending upon whether it is loaded with small or large pieces.

The larger and more modern plants employ a much more exact method. The raw materials are well protected under cover, and if the clay is not entirely dry when ready for use, steam pipes are employed for this purpose. The clay and grog are each ground separately, screened and then fed into separate bins, their size depending on the capacity of the plant, and their number on the number of clays used. The bottoms of the bins are funnel shaped, terminating in an ordinary disc feeder which automatically feeds the required amount of material. The most common type of disc feeder is shown in Fig. 1. It consists essentially of a hollow truncated cone, supported above a movable plate or disc, as shown. The material from the bin feeds down through the rotating cone onto the disc, operating in an opposite direction. The disc, must, of course, be large enough so that the material will not feed off, except as desired, and its speed must be low enough so the material will not be carried off by centrifugal force. Above the disc, is a device adjustable in a horizontal position, toward the center, which controls the feed. Each bin is provided with a feeding device of this sort, so arranged that they all feed into a spiral conveyor which in turn empties into a clay mixer. The feed control of each is so adjusted that the desired amount of material can be obtained in the correct proportions from each bin. One needs only to fill the bins with the ground materials, adjust the feed, and a uniform mixture is assured, without being dependent on the workmen.

This same sort of device in smaller size is also used to give a uniform feed of barium carbonate and similar materials.

Plants employing an arrangement of this kind ordinarily use the same mixture of clays for ware covered with either glaze or engobe, since each change in the mixture of course necessitates a readjustment of the feed. Smaller plants, still using the older methods, employ usually a different mixture for each purpose. For instance, red burning clays are used, if it is desired to produce terra cotta of that color, instead of using a colored engobe and glaze.

As a rule the shrinkage of a clay is so controlled that it amounts to about 1 inch per foot. Depending upon the clay used, this is accomplished by the use of 25-30 per cent grog. In many plants the clay is first stored, before being used, while in others it finds immediate use, the former method being more advisable if sufficient space is available.

A machine method of manufacture of terra cotta is generally impossible because of the widely different shapes and sizes required, plaster of paris molds being employed instead.

Pieces which are used only very seldom are modeled free hand from the terra cotta body.

In using the molds, the clay, roughly fashioned into spheres, is thrown in and tamped, thoroughly comforming to the shape of the mold in a layer from ¾ to 1-in. thick. After the mold has been so covered with clay, strengthening walls of the same weight as the outer layer are then put in at a distance of about 6 inches apart. In exceptionally large pieces these reinforcing walls are put in at right angles to each other, strengthening the ware in all directions. When the piece becomes leather hard, it is removed from the mold and its outer surface smoothed down.

In some plants the ware, resting on wooden pallets, is dried on the floor of the room in which it is made, steam pipes supplying the heat, the larger pieces being turned from time to time to prevent warping and cracking due to uneven drying. This method of drying is not only uneconomical in the amount of time required, but the heat is exceedingly uncomfortable for the men working in the room. In larger plants, closed drying rooms are used, the hot air being introduced from above through suitable ducts. For small pieces, steam racks are very well suited for drying purposes.

After the ware is thoroughly dry it is then provided with an engobe, or glaze, or both as desired. Because of the size and complicated shape of the ware, the glaze is usually sprayed on, using compressed air. The apparatus used for this purpose are of different design, but are all based on the same principle. Figure 2 shows the fundamental construction which is extremely simple, and can be made very easily at the plant. The pipes are ¼-in. in diameter. The apparatus serves only to convert the glaze slip into a spray and is not designed to act on an injector principle. The glaze tubs are elevated, either in the glaze room, or still higher, gravity furnishing the necessary power to propel the glaze through the pipes.

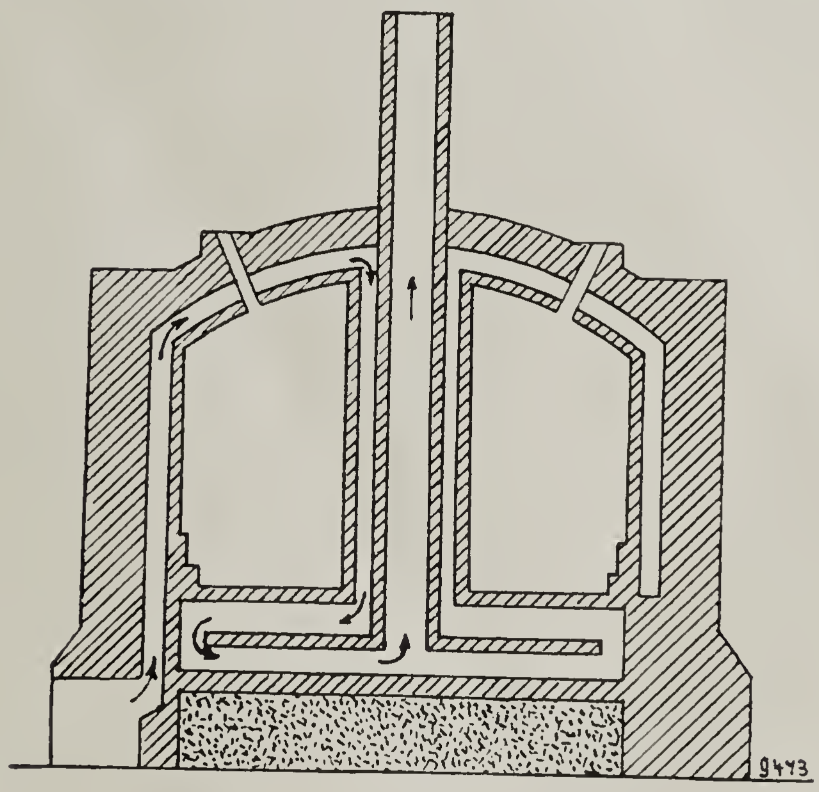

Fig. 3.

In many plants the pieces are glazed individually, while in others one or more pieces, depending on their size, are placed in a small truck and all sprayed together.

Although this method is not to be recommended too strongly because of the attendant uncleanliness and of the loss of a considerable amount of glaze, it is still used in plants which burn their ware at a temperature high enough to make possible the use of leadless glazes. In plants, however, which use lead glazes, it is imperative, for sanitary reasons, that a suction be provided to conduct the excess spray away.

If an engobe and glaze are both used, the engobe is first applied and before it becomes dry the glaze is sprayed on. Obviously, the engobe and glaze must mature as a satisfactory coating at a temperature that is suitable for the clays used in the terra cotta body. This temperature is in some plants about cone 3, in others cone 5-6, and in many as high as cone 7-8.

The engobes are used either alone, as e. g. when producing imitation of stone, or they serve under a transparent glaze as a covering to hide the color of the body. In the former case, the engobe should be vitrified, since in this condition it will not become dirty so readily, as if it were porous. Furthermore many clays contain vanadium salts, which produce unpleasing green and yellow spots on the finished ware. To prevent these from forming, the porous body must be covered with some waterproof coating, as a vitrified engobe or glaze.

Ordinarily, impure clays are used as engobes, which are made to suit the terra cotta body by proper additions of Cornish stone, flint, or grog, while the coloring oxides added usually contain considerable lime to facilitate early vitrification.

In plants burning their ware only to cone 3, an addition of a fritt of some kind is often necessary, to make the engobe vitreous at that temperature. When a glaze is used in connection with the engobe, the latter is, as a rule, white in color. These are, of course, compounded with only white burning material. It is not necessary that the engobe, in this case, be completely vitreous, a porosity lower than that of the body being recommended, however. At cone 3, it is difficult to produce a white engobe vitreous enough, for an addition of fritt tends to make it transparent, and for this reason the glazes employed at this temperature usually contain tin.

Glazes, matt and glossy, are employed in glazing terra cotta. In the eastern states, matt glazes seem to be preferred, while in the West the glossy type is the choice. The glazes employed at cone 3 are of the fluid raw lead type of the average formula: RO 0.25-0.35, Al_2O_3 2.5-3.0 SiO_2. Boric acid is best omitted entirely, since, because of its volatility in the long burn of a terra cotta kiln, unsatisfactory ware results. For the same reason, copper oxide is not suitable for the production of green colors, and furthermore, because of contamination, white glazes or glazes of other colors cannot be burned in the same kiln. For matt glazes at this temperature lead is almost indispensable, not because leadless glazes can not be produced at cone 3, but because with the clays used in a terra cotta body it is almost impossible to produce a glaze free from cracks, without using lead.

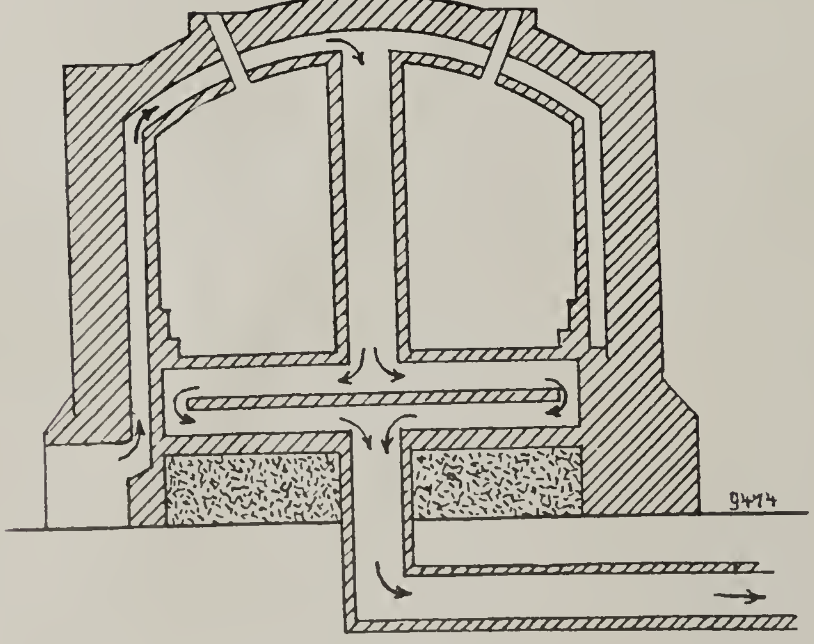

Fig. 4.

The so-called alumina-matt glazes are of the following average composition: RO, 0.25-0.50 Al_2O_3, 1.2-2.0 Si O_2. These glazes are well suited for the production of most colors. White is obtained by the use of tin, but with this constituent, in the long oxidizing fire, it is not possible to produce satisfactory chrome greens or chrome-tin-pinks. In place of this, the barium-matt glazes are very satisfactory. To mature at cone 3, it is necessary that the sum of the equivalents of BaO and PbO be equal to .25-30. They are of the average formula RO, .20-.3 O Al_2O_3, 1.2-1.6 SiO_2. Because of the rather large content of lead, it is advisable for sanitary reasons to fritt these glazes. Though fritted, they give satisfactory results because they are not so susceptible to the sulphurous gases, resulting from the sulphur compounds which most clays contain.

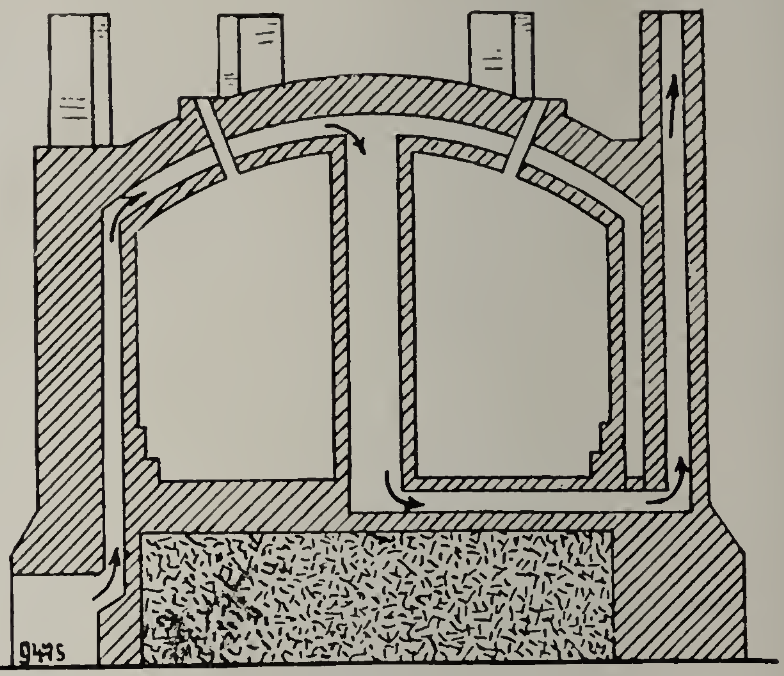

Fig. 5.

Ordinarily, fritting is carried on in saggers, coated with a kaolin-flint mixture, so that the vitreous mass can be merely dumped out, without the necessity of breaking the sagger. The fritted mass is first cleaned from the flint mixture adhering to and is then broken up in large, coarse crushers, and finally brought to a powder in ball mills. After being screened through 80-100 mesh screen, the fritt is mixed with 5-10 per cent of plastic clay and as a final step, is ground wet with the coloring material.

The higher the temperature of burning, the less does one have to resort to the use of lead and to fritting. At cone 7, raw materials can be used for both glossy and matt glazes. For glossy glazes, those of the ordinary stone ware type are used. At this temperature these glazes are of the following average composition: RO, 0.3-0.5 Al_2O_3 2.5-4.5 SiO_2.

Opaque glazes are obtained by the use of a relatively high alumina content with an addition of ZnO. By increasing the alumina content, the expensive ZnO can be lowered considerably or be replaced entirely. Care must be exercised in the use of ZnO, because of the tendency of this constituent to produce crawling. It is not advisable to use more than .25 eq. ZnO in terra cotta glazes.

Successful barium-matt glazes can be produced at cone 7, as well as at cone 3 and are satisfactory in the production of practically all colors. The following glaze has proved satisfactory in practice in all respects: .16 K_2O, .44 CaO, .35 BaO, .05 ZnO, .58 Al_2O_3, 2.8 SiO_2. An examination of the formula of this glaze shows that it is not of the matt type. With sharp firing and quick cooling this glaze matures to a very bright glossy surface, comparable in texture with that of a lead glaze. In a long fire and with slow cooling, characteristic of a terra cotta kiln, beautiful matts invariably are the result. Thousands of tons of terra cotta are carrying this glaze today. With slow firing as a rule, there is a much broader latitude of composition as regards matt glazes. For example, the following glossy glaze can, under proper firing conditions, mature to a very pleasing matt: .11 K_2O, .73 CaO, .16 MgO, .29 Al_2O_3, 2.56 SiO_2.

Terra cotta kilns are almost invariably of the muffle type operated with down draft. The method of construction varies in different plants, but the kilns are all built on practically the same principle.

The three most common types are shown by Figs. 3, 4 and 5. In each the flames travel up over the top wall of the muffle along the crown of the kiln to the middle where they are drawn down and out. The most apparent disadvantage of the kiln shown in Fig. 3 is the small amount of space available for setting. This draw-back can be obviated by the method shown in Fig. 4, employing only one single center flue, the stack being entirely outside the kiln; in this case one stack can be utilized for several kilns, or the construction shown in Fig. 5 can be used, each fire box having its individual stack. This construction eliminates the double floor, but it is somewhat complicated because of the many stacks.

In all the kilns openings are constructed in the crown leading into the muffle. During the early stages of firing, these are kept open so that the water vapor and products of the combustion of the organic material in the clay can escape. As the kiln becomes hot these openings are then closed.

The kilns vary greatly in size from one capable of holding 20 tons of terra cotta, to those having a capacity of 100 tons. A capacity of 60-70 tons probably is the average. The disadvantage of a small kiln is, of course, the uneven heat distribution. A kiln having a capacity of 60-75 tons is from 23x26 ft. inside diameter, and 16x19 ft. to the foot of the arch. The number of fire boxes varies of course with the size of the kiln, ranging from 6 to 12.

All of the more common fuels, coal, crude oil, and natural gas, are used in the terra cotta industry. Oil and gas are to be preferred inasmuch as they exert a less harmful influence on color glazes than does the coal. They both also have the advantage of producing an unintermittent oxidizing fire and require but little care. Inasmuch as there are no ashes to be handled, the kilns can be built more closely together, effecting a saving in space which is of no small importance in a large city.

As in burning any heavy ware, great care must be exercised during the water smoking period. During this stage, the fire is taken up very slowly until all the combined water has been expelled and any organic material burned out. From here on the kiln can be heated up as rapidly as is desired, a too rapid rate being hardly possible because of the close setting and the large amount of ware.

Depending upon the size of the kiln and the temperature to be attained, the length of the burn varies from 90 to 150 hours. In cooling a kiln filled with terra cotta, a certain amount of care must be exercised to avoid cracked ware. The critical stage in cooling the kiln lies between the temperature of red heat and the point of darkness. As soon as the kiln is cooled to red heat, the damper in the stack, as well as the fire boxes, are tightly shut. At least a day before the kiln is to be emptied, the damper is drawn and the fire boxes opened and the wicket torn down. In many plants a fan is connected to the kiln and cold air drawn through at this stage, in order to cool the kiln completely.

On account of the long fire, the slow cooling and the size of the kilns, they cannot be burned oftener than 2 to 3 times a month.

After the kiln has been drawn, the terra cotta is sorted out according to the job in which it is to be used, each piece carrying the order number to facilitate the sorting.

Before the ware is shipped, it is assembled according to the drawings, in a room for this purpose. Pieces which are too large or not of the correct angle are chipped to size with a chisel and then smoothed down on large surfacing wheels operating horizontally.

The larger terra cotta plants are located in large cities or their suburbs and, of course, it is their aim to supply their town with terra cotta, which results in close competition, making it necessary to seek business on the outside. As a matter of fact, shipments are made all over the United States and even to South America.

Here Is One Way to Boost Your Clay Products

Sheridan, Wyo., Manufacturer Uses Local Exposition to Let People Know What He Makes

Sheridan, Wyo., business men believe in letting not only their own people know what they make and how it is made, but the buying public for miles around. One of the methods employed to achieve this end is an annual "Made-in-Sheridan" Exposition at which all the manufactured products of the city are displayed. The Sheridan Press Brick & Tile Co., being a Sheridan concern and composed of Sheridan business men imbued with the Sheridan spirit, naturally takes part in these expositions. The illustration above shows the booth of this company at the recent show. This company took advantage of the opportunity to display a new product—drain tile. Heretofore it was believed the clay around Sheridan would not make a successful tile. The Sheridan Company, however, proved this a fallacy by exhibiting as fine a tile as anyone makes.

Thomas Rouse

Who's Who

Being Somewhat Personal and a Little Bit Reminiscent, With the Clayworker as the Target of the Camera Man and Editor

D. Warren DeRosay

I.—A Clayworker Who is Really Doing Big Things Out West
II.—One of the Few Men Who Helped Place Brazil on the Map
III.—A Manufacturer of Clay Products Who is Not Tied Down by Precedent

SOMETHING ABOUT BRAZIL AND ROUSE

WHO put Brazil on the map?" Ask any native Brazilian—provided he is a clayworker, and he will tell you that Tom Rouse helped do it and that he had considerable finger in the pie at that.

Brazil, as everyone knows, is located in Indiana and is the place where Will P. Blair once resided and where Jim Hoskins lives

Tom Rouse is the manager of the Brazil Clay Company. That fact, however did not have all to do with the placing of Brazil on the map, although it might be a contributing cause. Brazil got in the clay worker's geography because Tom Rouse and Jim Hoskins go to every convention.

Anyone who ever attended a convention of brickmakers can see the why and the how of it, as these two gentlemen never fail to let the crowd know they are in town.

For that reason, and Jim Hoskins, Brazil got on the map.

It is something to be a topographer, but Tom Rouse carries the distinction easily and even gives out the impression that it is the superior clay and the high class products that are turned out in Brazil that have made the village famous. We who go to the conventions every year, however, know differently.

KNOCKS PRECEDENT INTO A COCKED HAT

UP in Corry, Pa., there is a manufacturer of clay products who is not tied down by precedent—a distinction that is worthy of the biographer's attention, because,

This exceptional case is D. Warren De Rosey, general manager of the Corry Brick & Tile Company, Mr. De Rosey is one of the modern-day clayworkers.

F. W. Eastman

As a result Mr. De Rosey has an up-to-the-minute plant.

PUTS HOLLOW TILE ON PACIFIC COAST

THERE goes a man who is doing big things out West." said some one at the last convention of the National Brick Manufacturers' Association held in Chicago, as a broadshouldered, six-footer passed down "Peacock Alley" at the Congress Hotel, entered the Pompeian room and sat down to a table.

The six-footer was F. W. Eastman, until recently vice-president and general manager of the Far West Clay Company of Tacoma, Wash., but now interested in the Oregon Denison Block Company of Portland.

Mr. Eastman's early work with the hollow block was educational. He was convinced of course that the material he made was the proper material to use in fire-proof construction but it was necessary to convince the other fellow and he proceeded to do so.

Organizing a contracting department he started out to show the architects and the contractors how to use hollow tile. It was not very long before the contractors became familiar with this style of material and could figure it into a job with just as much ease as Mr. Eastman and his assistants. When this condition arrived Mr. Eastman went out of the contracting business.

The Pacific Coast cities are using hollow tile today.

Questions and Answers

A DEPARTMENT FOR THE SOLUTION OF THE KNOTTY PROBLEMS CONFRONTING THE CLAY WORKER

This department was inaugurated to be of material benefit to the readers of "Brick and Clay Record" and no charge is made for the service given. The advice of the world's recognized authorities in ceramics is offered to clayworkers who are invited to avail themselves of the opportunity to have their problems solved here. Should a reply be desired by letter enclose a stamped and addressed envelope for reply.

Corrects Information on Scumming.

In the October 21 issue of "Brick & Clay Record" answers were published to questions asked by two correspondents, in which carbonate of barytes was recommended for the elimination of white efflorescence and a hydrochloric acid test for determining the pressure of soluble salts in the clay. Paul Grace, secretary of the West Salem (Illinois) Hollow Brick & Tile Company writes, taking exception to the statements made, and his letter is published in full. It reads as follows:

"We note your replies to two correspondents, as published in the Oct. 21 issue, Michigan-171, and Pennsylvania-177.

"It seems to us that your statements are only partially correct and essentially misleading.

"In the first place it is stated that 'carbonate of barytes will neutralize the alkalies.' This may or may not be true, depending upon the nature of the 'alkalies.' The most frequent causes of scumming are calcium sulphate and calcium carbonate. Calcium sulphate is soluble in water to an extent sufficient to cause the salt to be brought to the surface of the ware by the flow of the water from the interior of the ware to the surface, in drying, and is left on the surface of the ware as a white 'scum.' Calcium carbonate is not soluble and does not cause trouble unless in connection with sulphur gases.

"Your 'hydrochloric acid test' leads you to conclusions which are exactly opposite to correct ones. If the clay contains calcium carbonate, effervescence will occur when an acid is dropped onto the clay, but, if the clay does contain calcium carbonate it will do no good to use barium carbonate. If the clay contains calcium sulphate no reaction apparent to the eye or ear will occur when acid is applied, but barium carbonate *may* correct the trouble if it is due to the sulphate. This in case the scum is deposited on the ware while in the drier.

"But suppose the trouble is due to calcium sulphate and it has been neutralized by barium carbonate and the ware set in the kiln free from scum. There are then present in the ware calcium carbonate and barium sulphate, formed by the reaction between the barium carbonate and calcium sulphate, together with the excess of barium carbonate. During the water-smoking period it sometimes happens, and usually does in continuous kilns, that the moisture driven out of the ware when it is first heated, condenses upon the cooler ware when in contact with the sulphur gases, and sulphuric acid is formed. This converts the insoluble calcium carbonate into the soluble sulphate which is brought to the surface of the ware, causing it to 'white-wash.'

"Again, some wares contain such quantities of calcium sulphate that it is impossible to add sufficient barium carbonate to precipitate all the calcium sulphate.

"The problem of correcting scumming is an extremely complicated one and depends upon so many factors that for you to say that the alkalies will be harmless if neutralized with barytes is far from correct.

"I believe that drier scum is usually caused by calcium sulphate and that calcium carbonate is the cause when the trouble occurs in the kiln. In the former case barium carbonate *may* correct it. But even when the drier scum is corrected by the use of barytes the trouble may reappear in the kiln and is almost certain to do so should the ware be set before it is bone dry.

"If your correspondents will obtain Ellis Lovejoy's booklet on 'Scumming and Efflorescence'* and peruse it carefully they will be shown the futility of accepting anything as a 'sure cure' for scumming in all cases, even when caused by the same thing."

Regarding Red Burning Sand.

R. G. Eisenhart, treasurer and general manager of the Horseheads (N. Y.) Brick Company, writes as follows:

"Your Colorado subscriber No. 176 will find it a very difficult matter to get red burning sand. I suppose he is making sand struck brick and wants a moulding sand to produce dark red color. The sand we have available produces a grayish cast when burned. To overcome this we mix with the sand a small amount of oxide of iron and it produces the desired results."

Wants to Bond Clay Plant.

211. *Missouri—I have a friend who has some money tied up in a clayworking plant and he has suggested a bond issue or some other means of turning the present indebtedness into collateral that will be negotiable. I understand that there are concerns that make a specialty of handling matters of this kind on commission. Can you put me in touch with any of them? The proposition is a sound one and would be successful if relieved of the present financial pressure.*

If any of our readers have been through the process of turning a bank indebtedness into a bond issue, or any similar form of transforming industrial notes into securities that are negotiated more easily than commercial paper, "Brick and Clay Record" would be glad to have a report on the method whereby it was accomplished and the names of the companies that managed the transactions.

A Simple Way to Analyze Clay.

208. *Kansas—Can you give me a concise statement of the procedure in analyzing clay—some simple method that one not familiar with chemistry can understand?*

The analysis of clays includes the estimation of silica, alumina, oxide of iron, lime, magnesia, alkalies and water. The material should be carefully sampled from a large quantity—the larger the better, bearing in mind that a good average is essential and that a careful and accurate analysis may be discredited because the chemist was misled. It is best to take the sample from as many different parts of the clay bed as possible. This will minimize the danger of striking some vein or pocket especially rich in any particular element. The analysis is divided into two parts—the mechanical and the chemical. The mechanical analysis is very simple and consists in washing the clay in a stream or jet of water, and the portions of different degrees of fineness are separated and collected in vessels where they are dried and weighed. For the chemical analysis the air-dried clay is powdered as finely as possible. A portion is weighed and dried at the boiling point of water for several days and then weighed. The loss equals water. About two grams of the dried clay are heated with concentrated sulphuric acid for eight or ten hours and the mass is evaporated to dryness to expel the acid. When cold the residue is boiled with water, filtered and the insoluble matter washed, dried, ignited and weighed. This insoluble matter consists of the silica, originally present in union with the bases in the clay, and also the small quantity of free silica originally present, together with the sand. This may be considered as silica, although sometimes it is classified under the separate heads—silica and sand. Take the filtrate from the above and add lead nitrate solution to it until there is a slight excess. Allow it to stand a few hours, filter and pass sulphuretted hydrogen through the filtrate to get rid of the excess of lead. Filter again and evaporate the solution to dryness. Heat gradually to about 250 degrees C. until no fumes of nitric acid are given off. The residue consists of alumina, ferric oxide, calcium, magnesium and alkaline nitrates. Moisten this residue with a concentrated solution of ammonium nitrate and then apply heat to the water bath until no further evolution of ammonia is perceived. Add hot water, filter and wash the alumina and ferric oxide. Then dry, ignite and weigh. The iron and alumina are separated either by reduction and solution in nitric acid or by fusing with carbonate of soda. To the filtrate from the above add ammonium oxalate. The result is calcium oxalate. Collect this and wash it. Then dry, ignite and weigh. Evaporate the filtrate to dryness and ignite to get rid of ammonia salts. Add oxalic acid, ignite carefully and separate the magnesia with water. The filtrate contains the alkalies, which, in turn are separated in the usual manner with platinum tetrachloride. This, in a measure, gives a brief outline the manner in which an analysis is made. To give the actual methods employed would take more space than is warranted. If our correspondent is seriously disposed to learn how to analyze his clay he will find a wonderfully available aid in the book, "How to Analyze Clay," listed in "The Clayworker's Library" in the front part of this magazine. It is written for the layman and tells how to make or procure the simple apparatus necessary.

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*"Scumming and Efflorescence," by Ellis Lovejoy. Listed in "Brick and Clay Record's" Library of Books for the Clayworker. Price, 50 cents, postpaid.

Seeks Arguments to Sell Brick.

213. *Iowa.—We wish to start an advertising campaign in our community. Do you publish any pamphlets or literature showing the merits or giving some good arguments in favor of brick? If you have please send us a sample copy or let us know where we can secure same.*

Almost any issue of "Brick and Clay Record" contains "good arguments" for brick. Especial attention is directed to recent numbers as follows: June 15, "What Brick Houses Cost." July 1, "Building a Brick House with a Camera." Aug 1, "Safe Factory Construction." Sept. 15, "Reinforced Brick Walls Cheaper than Concrete," Oct. 21, "The Silo How to Make it Permanent." If you keep a file of the magazine you will find "arguments" in other issues. We do not have any pamphlets such as asked for, but the Building Brick Association of America, Marbridge Bldg., New York, will supply you with several very valuable books if you request them. "Brick and Clay Record" has under preparation several bulletins along the same line but these will not be ready for distribution for some time. A book, "How to Create a Demand for Clay Products," is another publication under preparation. It is being written by the editor of this journal and will be ready for distribution about Jan. 1. This book will outline an advertising campaign for the clayworker, and besides giving a complete scheme or plan to follow, a full set of ads will be shown.

Another Question as to "Scoria" Brick.

209. *Kentucky—What is "Scoria" brick? I have often heard the word applied to clay brick, but have not been able to find out what it signifies.*

Answering another correspondent who asked where these brick were made, Mr. E. F. Dartnell, of Montreal, P. Q., in the June 15 issue of "Brick and Clay Record" made the following statement: "'Scoria' brick are made only in the Cleveland district, in England, and from slag from the Cleveland iron ores. Slag from blast furnaces using other ores will not make satisfactory brick or block. Experiments have been made with other slags in England, Germany and the United States, but in every case have, I understand, been failures. The making of them in England is practically a monopoly. There are, I think, three companies making them, but they have a hard and fast combine. They are considered in England, and here, as the best paving brick or block made."

Wants Machine to Grind Dry Pan Tailings.

206. *Georgia.—Do you know if there is any machine on the market that will grind tailings from the dry-pans, thus relieving them, and increasing their capacity? If so, please give particulars of same, what power is required, and also cost.*

Any information that can be given this department on the above subject will be forwarded to the correspondent and published for the benefit of the craft at large.

Wants Plans of Hollow Tile Garages.

207. *New Jersey.—We would like to know if you print any books giving plans of hollow tile garages and other small buildings, or know where they can be obtained.*

"Brick & Clay Record" was informed, some time since, that the Radford Architectural Company, of Chicago, intended publishing a book of this kind, but so far as we know, this has not been done. The only books of plans that have been pulished, so far as we know, are those issued by the National Fireproofing Company, and those are for large residence work. "Brick & Clay Record" will be glad to publish plans of low cost structures built of hollow tile, if its readers will send in the proper information. Later, these articles could be incorporated in a booklet that would, we are sure, be invaluable to the hollow tile manufacturer, for use among his prospective customers.

Salesmen Want Knowledge.

212. *Iowa.—Could you refer us to any book or set of books dealing with both the theory and practice of clay manufacture in general? The writer, a salesman, is quite unfamiliar with the general theory of brickmaking, and many instances occur when such information could be made good use of. Often such cases as shrinkage, effects of steam drying, effects of coloring and glossing come up, all of which I am at a loss to explain.*

Our ambitious friend has cut out a considerable task for himself but one that is worth the while accomplishing. Any salesman equipped as he aspires to be has a valuable asset and stands a better show among his competitors than the fellow not so fortunate. There are several very valuable books on subjects referred to. Searle's "Modern Brickmaking" is comprehensive and should be in not only every clay-worker's library, but also in the hands of every salesman. It is listed in our book department and sells for $5 postpaid. Seger's Collected Works (condensed) is another valuable book and is listed at $3.00, postpaid. Mr. Searles is now writing a new book for "Brick and Clay Record" which will be run during 1914 in serial form in this journal, and later published as a book. Its title, "American Methods of Brickmaking," suggests the nature of its contents. We already have the first manuscript from the author and it is sufficient to show how thorough Mr. Searles is in handling the problem.

Seeks an Address.

172. *Ohio.—I note in the Oct. 21 issue that 172 Ohio has located a fine deposit of white clay which would be adaptable to the manufacture of paper. I would like to have samples of this clay.*

We have forwarded the address of requested to the correspondent. We might add here that this case is one of many wherein we have been of practical use to our readers in putting buyer and seller in touch with each other.

The First President of the N. B. M. A.

210. *Minnesota—Who was the first president of the National Brick Manufacturers' Association, and where was the first convention held and when?*

W. A. Eudaly, of Cincinnati, Ohio, was the first president, being elected at the convention held in his home city, Sept. 22 and 23, 1886, this being the first convention of the N. B. M. A.

Who Makes Clay Pigeons?

204. *Philippine Islands—I would like to obtain information concerning the manufacture of clay pigeons. I understand that they were formerly made of clay alone, but now are made of a mixture of pitch and clay. I would appreciate information on both processes.*

Will "Brick and Clay Record" readers send any information they may be able to give, to this department?

Information Wanted.

Frank Reiser, of Reiser, Tex., wants to locate P. J. Kroeger and J. G. Waters.

Indiana Sewer Pipe Company, 509 Chamber of Commerce, Chicago, wants information regarding clay crushers and pulverizers.

P. Petrusa, Castor, Alta., Canada, wants to know who makes the Grath Special Hand Press, and where it is possible to secure new dies that will fit one of these presses.

Standard Clay Company, of 516 Connell Building, Scranton, Pa., wants catalogues and other information regarding clay-washing machinery. The mines of the company are at Little Gap, Pa.

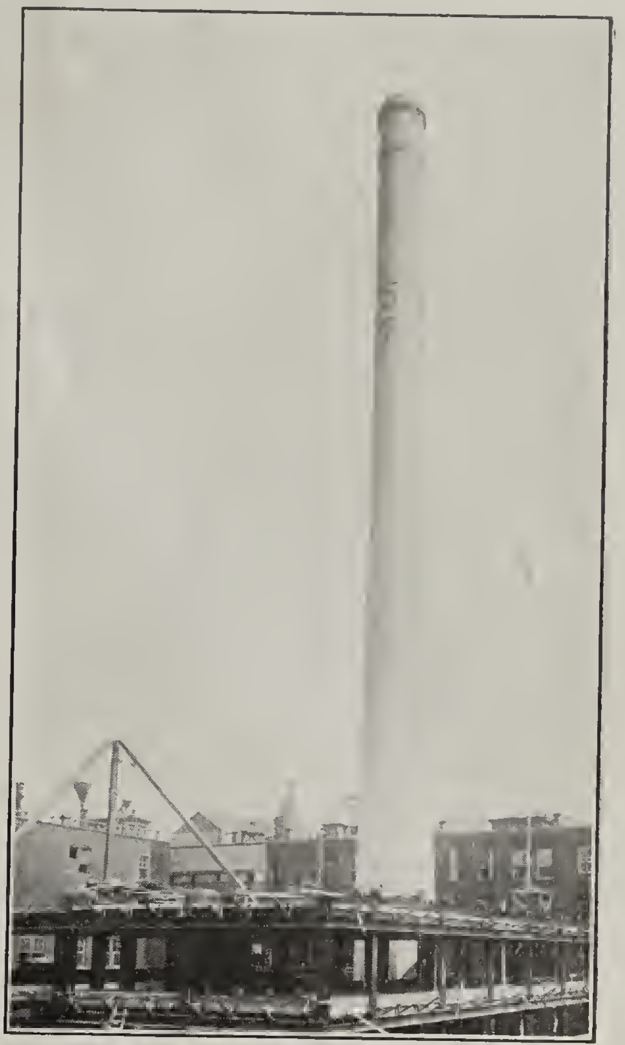
Beck & Corbitt Iron Company, First street, St. Louis, Mo., wants information and prices on pug mills for brickmaking plants, having a customer who wishes to purchase one.

C. C. Cooke, of Grofton, Va., is planning the erection of a brickmaking plant and wants catalogues of machinery used in the manufacture of both stiff-mud and soft-mud brick.

The Kortkamp Brick & Tile Co., 304 School St., Hillsboro, Ill., wants information, catalogues, etc., on elevators and conveyors also on kilns, kiln door frames, lugs and bands.

B. F. Hand, E. M., 312 H. W. Hellman Bldg., Los Angeles, Cal., wants to get in touch with manufacturers of machinery for making tile of all kinds.

140,000 Clay Blocks Were Used on This Chimney



An Interlocking Radial Block Chimney

The huge stack that has just been completed for the new, seven-story power building of the H. J. Heinz Preserving Company, of Pittsburgh, Pa., is the highest in Allegheny county, and measures 250 ft. above the foundations. The inside diameter at the bottom is 15 ft. 7 in. and the exterior diameter 20 ft. 6 in. It is built of Heine interlocking radial brick and tapers to a 10 ft. inside diameter at the top, and is provided inside and out with one-half inch, copper lightning rods. The approximate weight, including wind pressure, is 2,500 tons. The foundation is of reinforced concrete and measures 37 ft. sq. and 10 ft. 6 in. thick. The foundation itself rests on 166 concrete piles that average 25 ft. in length.

The stack contains 140,000 Heine chimney blocks, equivalent to 350,000 standard brick. The approximate weight of the stack is 110,000 tons.

A Book on Fireplaces.

Some time since "Brick & Clay Record" reviewed, briefly, the book of "Brick Fireplaces" published by the Thomas Moulding Brick Company of Chicago. This book is now ready for distribution, and copies will be sent gratis to anyone who is interested in the latest ideas in fireplace construction. While it may not be possible to induce all home-builders to build brick houses, it is a fact that no modern home is complete without an open fireplace, and no material is so perfect for the purpose as brick. The designs published in the booklet are free from "moulded shapes" and consequently eliminate the trouble of matching up the jamb brick and the band courses to the body brick in the mantel. It also gives the widest range of selection in color and texture and, since the drawings all show views of interiors in which the fireplaces are only a part of the architectural scheme, many hints on decoration and on fireplace furniture can be obtained by a perusal of its well printed pages. Accompanying the booklet is a catalogue of grates, andirons, dampers and appurtenances, in black iron, brass and copper. Manufacturers and dealers in brick will find the fireplace business a good "side-line" and should write the Thomas Moulding Brick Company of Chicago, for copies to distribute, and for the special discounts from published prices that are given to the trade.

The Superintendent

A DEPARTMENT CONDUCTED FOR THE INTERCHANGE OF IDEAS IN METHODS OF MANUFACTURE

Contributions from our readers are solicited for this department on any subject pertaining to the manufacturing end of the industry. Short cuts and labor-saving suggestions are particularly sought. Address all communications to the Editor of the Superintendent Department. Brick and Clay Record, Chicago.

Screen Your Clay.

Screen your ground clay to get out the lumps. It pays. In most cases it also pays to dry your clay in order to permit screening.

Keep Your Gravity Conveyors in Condition.

Unless you keep your gravity conveyors in good condition you fail to get their full efficiency. The same is true of any device or machine.

An Automatic Scale for the Pug Mill.

The use of an automatic weighing device for the clay in a pug mill and a trap to deliver a fixed quantity of water ends the trouble of soft and stiff pugs.

An Expensive Form of Waste.

An expensive form of waste is putting a poorly formed or cracked brick into the kiln. Send it back to the pug mill while it is soft mud and work it over.

Keep Draft Flues Clean.

When drawing a section of a continuous tunnel kiln remove the ashes carefully and see at the same time that the draft flues under the floor are kept clean.

Poor Tracks are Costly.

A well-ballasted train way makes it easier for both man and horse at the clay pit. A horse with sure footing can pull more and man who does not have to stumble over ruts is in a better frame of mind.

A Home Made Pipe Wrench.

If you require a pipe wrench and have none handy one may be improvised by taking a round file and fitting it in the jaws of an ordinary wrench, placing the pipe between the file and one jaw of the wrench.

Rather Paradoxical but True.

Perfect annealing depends on the fact that no cold air enters the kiln, yet to obtain the results you must temper your brick just as you do steel or glass—by cooling. The difference, however, is that with brick the cooling is done with hot air.

Economy in Storing Clay.

There is real economy in the storage shed or bin, aside from the solution of the wet clay problem. Repairs or accidents may cause you to shut down the augur, but the grinding machine is still delivering its regular supply. Should the grinding machine get out of order, the brick machine is not handicapped, for the bin holds a surplus.

Germany Uses Perforated Wet Pans.

It is necessary to prepare clay for sewer pipe in wet pans but as the wet pan is intermittent in action, the operation is unsatisfactory when applied to machines which are continuous in their action. In Germany, perforated wet pans are used, as well as perforated rolls, with success. The clay is ground in an ordinary well, then fed into the perforated machine, which forces the wet clay through the narrow slits in the perforated plates, thus giving a continuous stream of clay pugged to the best possible condition.

Should Use Pyrometers.

Every kiln should have a pyrometer and recording draft gauges. They determine the best draft at each stage of the burning and enable the burner to maintain this draft. The pyrometer keeps the burner wide awake and alert and shows quickly any change in the kiln temperature. Their use saves loss of fuel and damage to ware.

Trouble in the Elevator Spout.

Sometimes when your clay elevator gives trouble at the spout leading to the screen, it is likely because the spout is too high and the clay splits on the edge of the spout, part going over the screen and part down the elevator chute. The throat, possibly, is too wide. Take a piece of stiff belting and close up the throat, eliminating any danger of the bucket striking.

Kiln Bottoms Must be Drained.

It is important that the kiln should be thoroughly drained and insulated from ground moisture. Moisture rises by capillarity through the kiln and flue walls to the kiln floor and every pound of water evaporated carries away the value of one-thirteenth of a pound of coal. The moisture also keeps the bottom of the kiln cold and keeps down the temperature.

Buying Second Hand Tools.

Buying second hand machinery and tools is not as a rule. very profitable. A certain brickmaker bought a lot of pallets and drying racks from another clayworker who was retiring from business. When the boards reached him, he took one glance at them and consigned the lot to the fuel pile. Three quarters of the lot were so warped it was impractical to use them. Better invest in new machines and tools.

Piling Face Brick.

There are two methods in use for piling face brick. Some superintendents insist that brick can be handled much faster in loading them out by piling them on edge, face down, in straw. Others do this without any packing, whatever. Damp and rotting straw, however, is apt to damage the face, or if the packing is omitted, the edges chip. The foreman cannot see how the sorting is done, either—another serious objection. Another method is to pile the brick face out on the flat, two courses high. The loader will handle four brick at a time, in loading these out, two in each hand, which is about as many as if piled on edge. The brick, of course. are not damaged in any way and the foreman can watch the sorting.

Machinery and Equipment

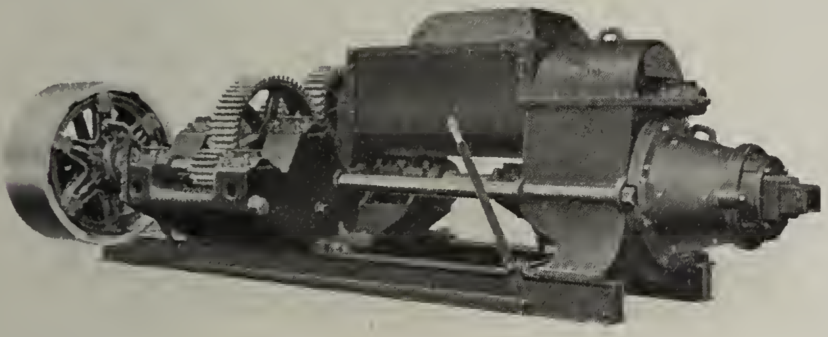
A Department Devoted to New Devices and the Improvements on the Old Used in Clay-Working Plants, With a Summary of Recent Purchases and Installations

A. A. OLDHAM,
Secretary and Treasurer, Bonnot Co.,
Canton, Ohio.

Recently, when the visiting engineers made the special inspection trip to some of the paving brick plants in Ohio as guests of the National Paving Brick Manufacturers' Association, favorable comment was made by the committee on the modern equipment found. Among the plants visited were the Metropolitan at Canton and the Bessemer at Youngstown. These are not only two of the largest in the industry, but also are among the most modernly equipped.

Both of these plants have an enormous output and of course have to be speeded up to the top notch to take care of the work demanded of them. For this reason the highest type of machinery must be installed to give speed, to prevent expensive delays through breaks and to maintain quality, at the same time bringing the operation cost to a figure that means profit.

It is on the augur machine that most of the burden must fall and both of these plants did just as many of the paving brick plants in the country have done—installed "Canton Specials." This is an extra heavy augur made especially for the paving brick industry and is said to be the "strongest and largest brick machine made," the quotation being taken from a statement made by its manufacturers, the Bonnot Company. The accompanying pictures of the "Canton Special" give some idea of its construction. The picture of the interior showing the thrust bearings and gearings is especially suggestive. The main gearing has a 12-inch face and the intermediate a 10-inch face, all the gears being cut steel and housed.



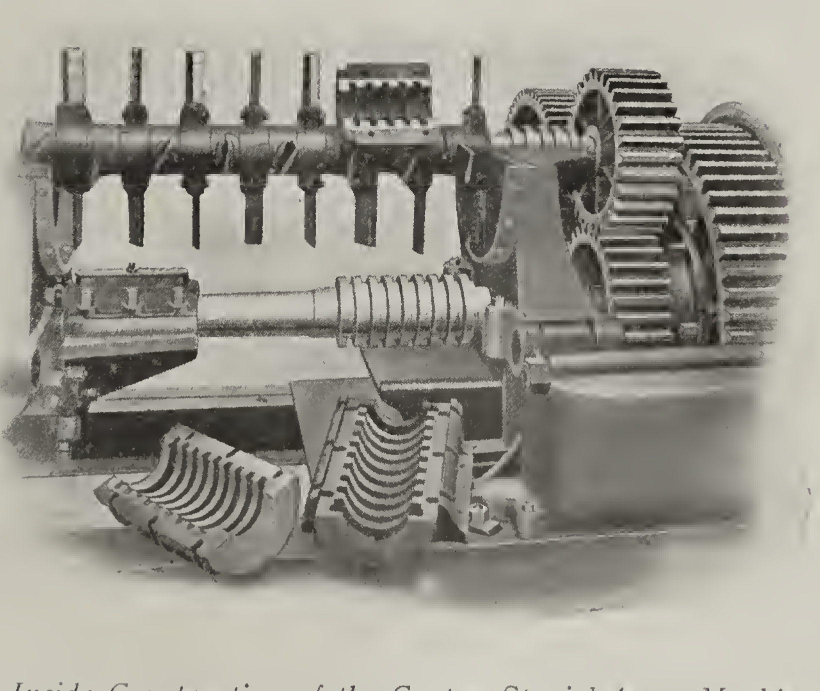
The Canton Special—Used by Many of the Largest Paving Block Manufacturers

This machine is a powerfully built one, as can be seen by the pictures.

There are six "Canton Specials" in the Metropolitan plant and two in the Bessemer. The "Special" is to be found not only in these two model plants, but also in many others throughout the country. The Peebles Paving Brick Co., Portsmouth, Ohio, has two and there are machines in the Terre Haute Vitrified Paving Brick Co., Terre Haute, Ind.; The Windsor Brick Co., Akron, Ohio; the Alton Brick Co., Alton, Ohio; the Buffalo Brick Co., Buffalo, Kans.; The Jamestown Shale Paving Brick Co., Jamestown, N. Y.; The Albion Shale Brick Co., Albion, Ill.; the Tregillus Clay Products Co., Calgary, Alberta, and the Medicine Hat Brick Co., Medicine Hat, Alberta.

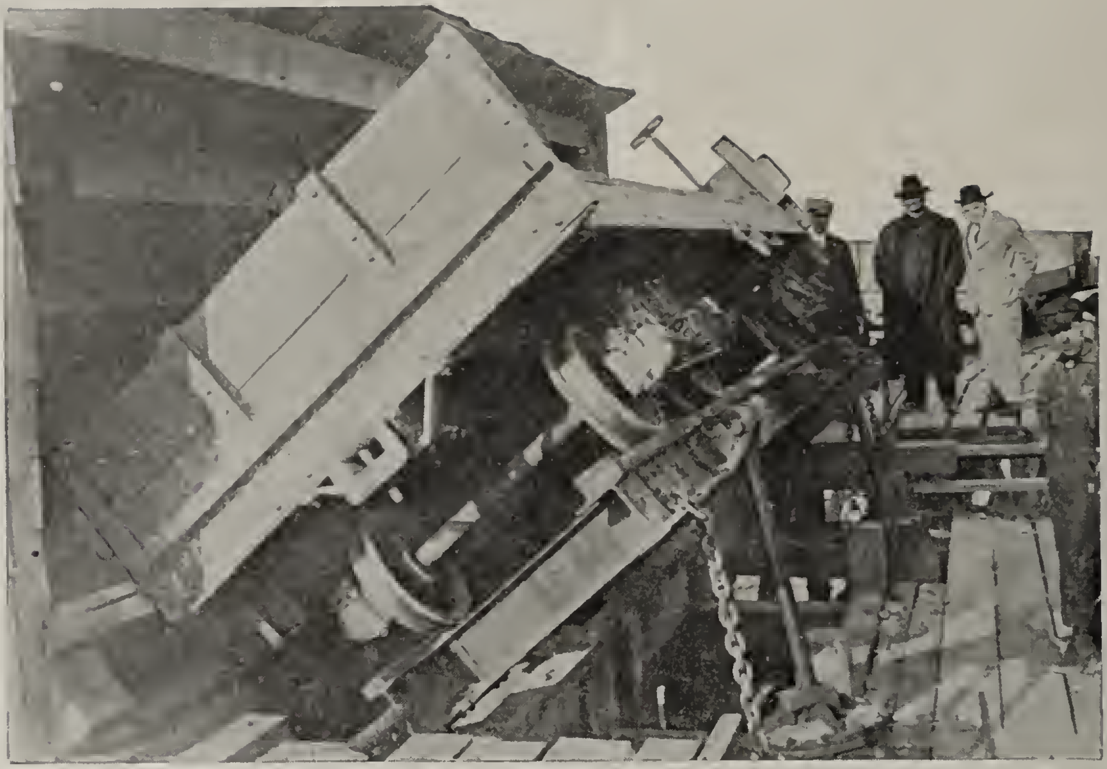
It might be added, also, that not only are the Metropolitan and Bessemer plants equipped with the Bonnot represses, but that many of the other plants named have them.

The Bonnot Company, of which A. A. Oldham is the secretary and treasurer, has planned an aggressive selling campaign this season, figuring that the great showing made in the clay product industry this past year, and especially in the paving brick field, will mean the re-equipment of many of the old plants, with additional or larger machines and a general need of new machinery.



Inside Construction of the Canton Special Augur Machine

Catalogues describing the entire manufactured line of this company are mailed to all clayworkers who are interested. A postal card request is all that is necessary to obtain the same by return mail.



"A System Was Devised Which Made Unloading Easier and Cheaper"

Quarry Cars for Handling Clay

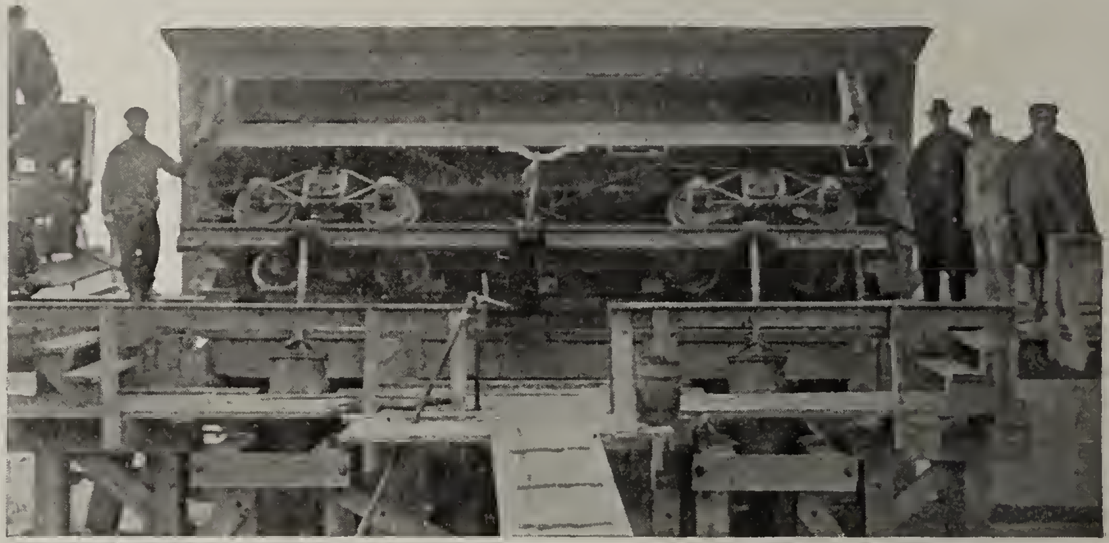
Koppel Engineers Design System to Lessen Cost of Unloading Raw Material for Warren Silica Company's Plant

The economical handling of clay is the subject of greatest importance to the brick maker. Cars which are to be used in service for carrying clay or slate from the pit to the clay pan or crusher should meet the following requirements:

First: Height from ground to top of bed should be as low as possible, particularly if cars are to be loaded by hand.

Second: Cars should be able to be dumped instantaneously and automatically when they arrive at crusher, both to save time in unloading and to save the cost of unloading by hand.

A large number of different designs have been made for such service, but it is not possible to make a car of which the body will dump without also making it so high that it cannot be loaded by hand, if the capacity of the car is to be large enough to make it economical. This, of course, does not apply to cars which are loaded by a steam shovel as the height of these cars can be several times as high as the car which is to be loaded by hand, but a low car is also an advantage for steam shovel service as it makes it possible for the steam shovel to load the cars for a longer time without shifting the tracks.



This Shows How the Car Looks When It is Discharging Its Load

There have been several designs of cars made which had a separate body hinged on one side to the underframe in connection with which an air or electric hoist located at the crusher was used. A hook from this hoist engaged a side of the car opposite the crusher, lifting the body up so that the load would slide into the crusher. A car constructed in this manner, however, is very expensive, as it requires practically two underframes and if a large number of cars are used the cost of the equipment is increased excessively.

When the Warren Silica Company was installing its new quarry equipment this point was taken up and in connection with the engineers of the Orenstein-Arthur Koppel Company, of Pittsburgh, Pa., a system was devised which would lessen the cost of the equipment and make unloading cheaper than it would be with any of the other types of equipment mentioned. The accompanying cuts show the equipment which was installed and it will be noted that the type of car installed consists of a very low type double truck flat car, which has a platform 20 feet long by 6' [illegible] 6" feet wide by 2 feet by 9 inches high to top of floor, thus making it possible for men to load the car without any extra exertion. At the crusher is installed a platform hinged at one side and supported by the other on two air cylinders. When the car arrives at the crusher it runs on this platform, a catch engages the side of the car automatically and by admitting air into air cylinders the tipple with the car is lifted up so that the car floor assumes a slope of 45 degrees, the load then slides off the car into the crusher and upon releasing the air from the cylinders the tipple assumes an upright position and the train moves on, bringing another loaded car on the platform.

This plan of operation has proven very satisfactory and economical, the time and labor taken in dumping the car being less than with any of the types of equipment usually employed for this purpose.

THE AMERICAN CLAY MACHINERY CO.
BUCYRUS, OHIO.

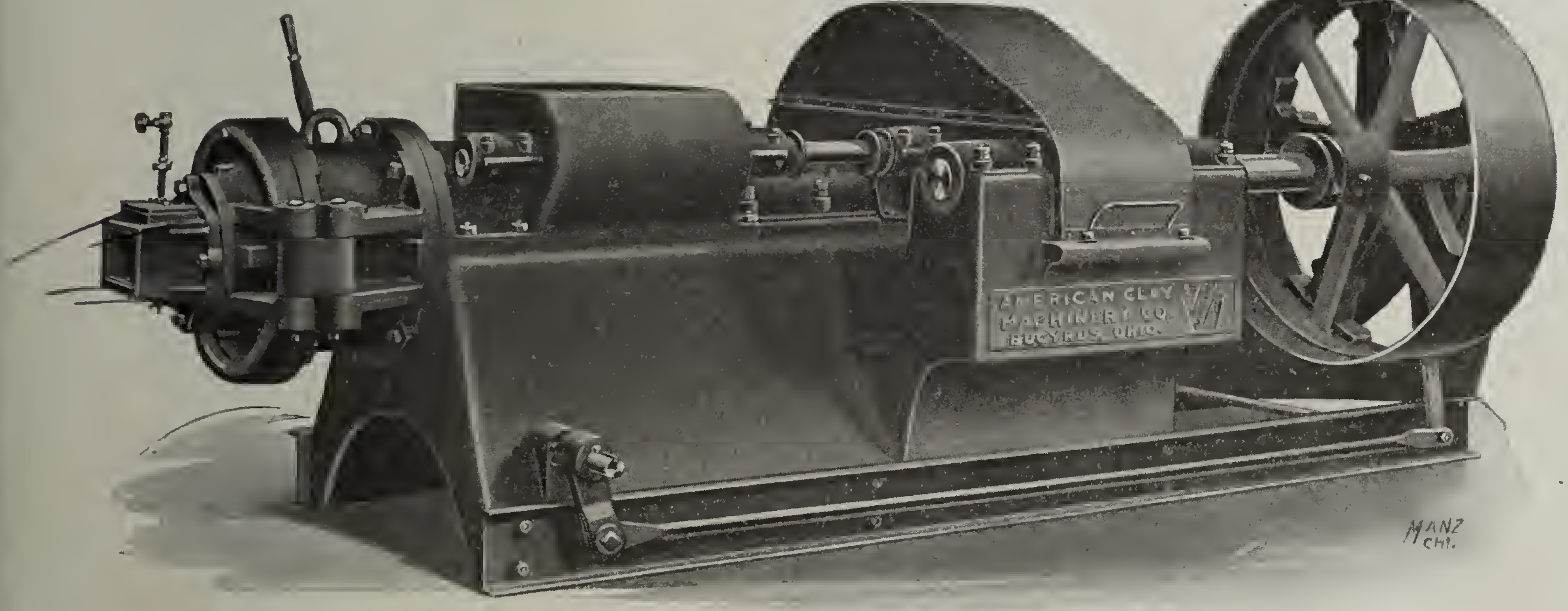
LOW COST MACHINE

Without question the cheapest thing is that which will deliver the best service and greatest return for the dollars invested. To consider anything else is false economy—wasteful economy. It is a momentary economy, founded, not on future benefits, but on dollars retained at the present time which will exact a heavy toll in disappointments, delays and repairs.

In the No. 290 American Auger Machine we offer the wise manufacturer a value which will deliver a great deal more per dollar than has heretofore been offered. From day to day it will demonstrate the economy of "first cost wisdom." On the basis of first cost it is not expensive; on the basis of daily performance it is cheap.

If you can use the capacity promised by the American 290 Machine you are cheating yourself if you do not install it. Compare this output of the 290 with your present production.

Building Brick, 10,000 to 15,000 per hour.
Paving Block, 7,500 to 10,000 per hour.
Fireproofing or Hollow Blocks, 10 to 15 tons per hour.



No. 290 AUGER MACHINE

A few items entering into this production and repair saving quality are as follows:

Heavy one-piece base casting forming bearings, oil reservoir, and clay cylinder. Large forged steel auger shaft and large feeder shaft. Large ring oiling babbitted bearings. Independent, self-aligning and thrust bearing. American special "wear-well metal" cast gears, run in oil. Continuous auger with chilled wearing surface, removable from front of machine. Sectional removable liners for clay cylinder, adjustments for wear compensation. Low horsepower requirements. Economy of upkeep. More output at less labor cost.

More particulars on request. Ask for names of users and results. We build everything needed in every branch of the clay trade.

The American Haigh Kiln will cut your burning cost in two.

THE AMERICAN CLAY MACHINERY CO.
BUCYRUS, OHIO

BUILT RIGHT RUN RIGHT

Discusses Slack Belts.

A report of careful tests by Robert Thurston Kent on the advantage of the treating of belting with preservative and material to increase cohesion between belt and pulley surfaces, is issued by the Cling Surface Co., of Buffalo, N. Y. Inasmuch as the theory of running belts slack has caused considerable discussion and is now looked upon with more favor than ever, brickmakers probably will be interested in reading this article, a copy of which may be had for the asking.

Buys McCreery Patents.

The American Blower Company of Detroit, Mich., has purchased the entire air washer interests, including patent rights, of the McCreery Engineering Company, formerly of Toledo, Ohio, and later of Detroit. The McCreery Company enjoyed a universal reputation as engineers and manufacturers of efficient air purifying apparatus. Its earlier efforts were almost exclusively confined to marine work and later entering the general ventilating field in which the air purifier now forms an indispensable part of any mechanical ventilating system. The McCreery purifying, cooling and humidifying equipment hereafter will be exclusively manufactured and sold by the American Blower Company under its trade-mark *"Sirocco."*

Marion Issues New Catalogue.

With the announcement that it is constructing a new foundry 80 ft. wide by 389 ft. long, the Marion (Ind.) Machine, Foundry and Supply Company issues a catalogue of its "Shear Klean," Interlocking and Rocker grates, that should interest every clayworker. The growing importance of fuel costs makes the question of proper combustion one that needs daily study and attention, and the catalogue that the Marion people are putting out contains information that must be of value to every man who wants to see his fuel bill reduced.

Offers Free Samples of Corundum Slip.

Believing that proof is better than claims to superiority, the Corundum Products Company, of Spokane, Wash., manufacturers of slip for clayworkers, says that it will gladly give a sack of the slip, for test purposes, to any clayworker who cares to try it out on his ware. This slip has given the best of satisfaction wherever used; it does not have to be bolted and its color is particularly good. If you can afford to pay the freight from Spokane to your plant, on a slip that may be better, in many ways, than the one you are using—drop a card to the Corundum Products Company and give it a chance to demonstrate the superiority of its material.

Belt Salesman Gets Promotion as Manager

To a large number of our readers it will be unnecessary to say that the above picture is that of William M. Taylor, known to his thousands of intimate clay-working friends as "Billy Taylor."

If there is anything he is more intimately known by than "Billy," it is perhaps "Leviathan," for this young man has been representing the Main Belting Company, of Chicago, for ten years, working among the clay-working plants, and selling Leviathan belting, with emphasis on the "selling."

The reason of our mentioning these things at this time is that Mr. Taylor has recently been appointed manager of the Main Belting Company's branch at Birmingham, Ala. All who know him will not only "pull" for, but will believe implicitly in, a continuance of his business success.

Gets Order for a Crusher In Far Away Calcutta

An order for equipment received the past week from India by one of the machinery advertisers in "Brick and Clay Record" show how far-reaching are the messages contained in its pages. Burn & Co. Ltd., owners of "The Potteries" at Raneegunge, E. I. Rey, Bengal, India, and regular readers of this magazine, are the ordering firm and the Williams Patent Crusher & Pulverizer Co., are the advertisers who received the order. In the first letter of inquiry from Messrs. Burn, written last May, say they "are interested in the Williams Crusher and Pulverizer advertised in "Brick and Clay Record" and, after stating the problem in their plant, ask for quotations. The Chicago office of the Williams Company, of which Milton J. Williams is the manager, has handled the correspondence and is preparing to ship one No. 1 Deck Sweeper with a full list of extra parts. The machine will go by rail to San Francisco, and from there by boat to Calcutta, India, where it will be delivered to the purchasers.

Stops New Clay Plant by Injunction.

The Rush Creek Clay Company, at New Lexington, Ohio, which is erecting a tile plant near Junction City, in that state, has been enjoined from further work in the construction of buildings by a temporary order, granted by the Probate Court at Lancaster, Ohio. This was upon the petition of the Ohio Fuel Company, which alleged that the digging up of the soil in and about its trunk pipe-lines and the erection of the new buildings over and upon is right of way, greatly interfered with the purpose of the Ohio Fuel Company, which concern is a gas supplying corporation with headquarters in Columbus, Ohio.

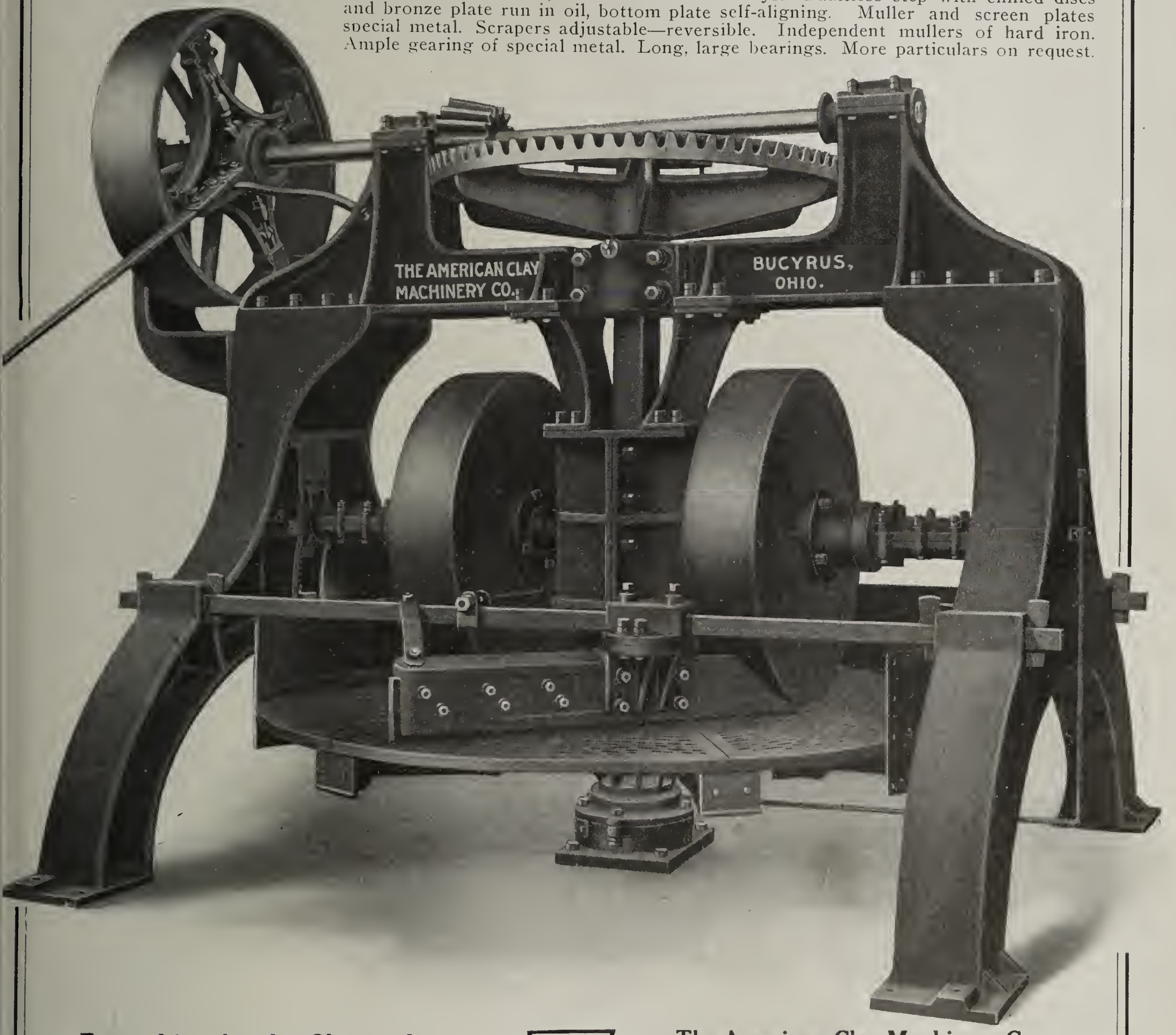
Have You Scumming?

Prof. Binns Tells You How to Cure it in the Nov. 18 Issue of "Brick and Clay Record."

THE AMERICAN CLAY MACHINERY CO.
BUCYRUS, OHIO.

YOUR PAN PROFITS

The profits of a pan to you are in its production. Here are points which insure capacity and faultless operation of American Pans. Best material and labor. Strong proportions, great screening surface. Massive full length frames, broad bearing surface, fitted joints, lock nuts, steel tie bars with keys. Faultless step with chilled discs and bronze plate run in oil, bottom plate self-aligning. Muller and screen plates special metal. Scrapers adjustable—reversible. Independent mullers of hard iron. Ample gearing of special metal. Long, large bearings. More particulars on request.



Everything for the Clayworker

BUILT RIGHT
RUN RIGHT

The American Clay Machinery Co.
Bucyrus, Ohio

The Federal Clay Product Co.
Mineral City, Ohio
Fire Brick for Kiln Work Made a Specialty

ROBERT W. HUNT JNO. J. CONE JAS. C. HALLSTED D. W. McNAUGHER
ROBERT W. HUNT & CO., ENGINEERS
INSPECTION AND TESTS OF BRICK AND ALL CLAY PRODUCTS
CHICAGO 2200 Insurance Exchange Bldg.
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Anchor Brand Colors
For Mortar Cement and Brick
Brown, Black, Red and Buff Strongest and most durable
Manufactured by
C. K. WILLIAMS & CO., EASTON, PA., U. S. A.
Correspondence solicited

"STAG" BRAND
Manganese Steel Castings
EDGAR ALLEN AMERICAN MANGANESE STEEL CO.
Chicago, Ill., New Castle, Del.

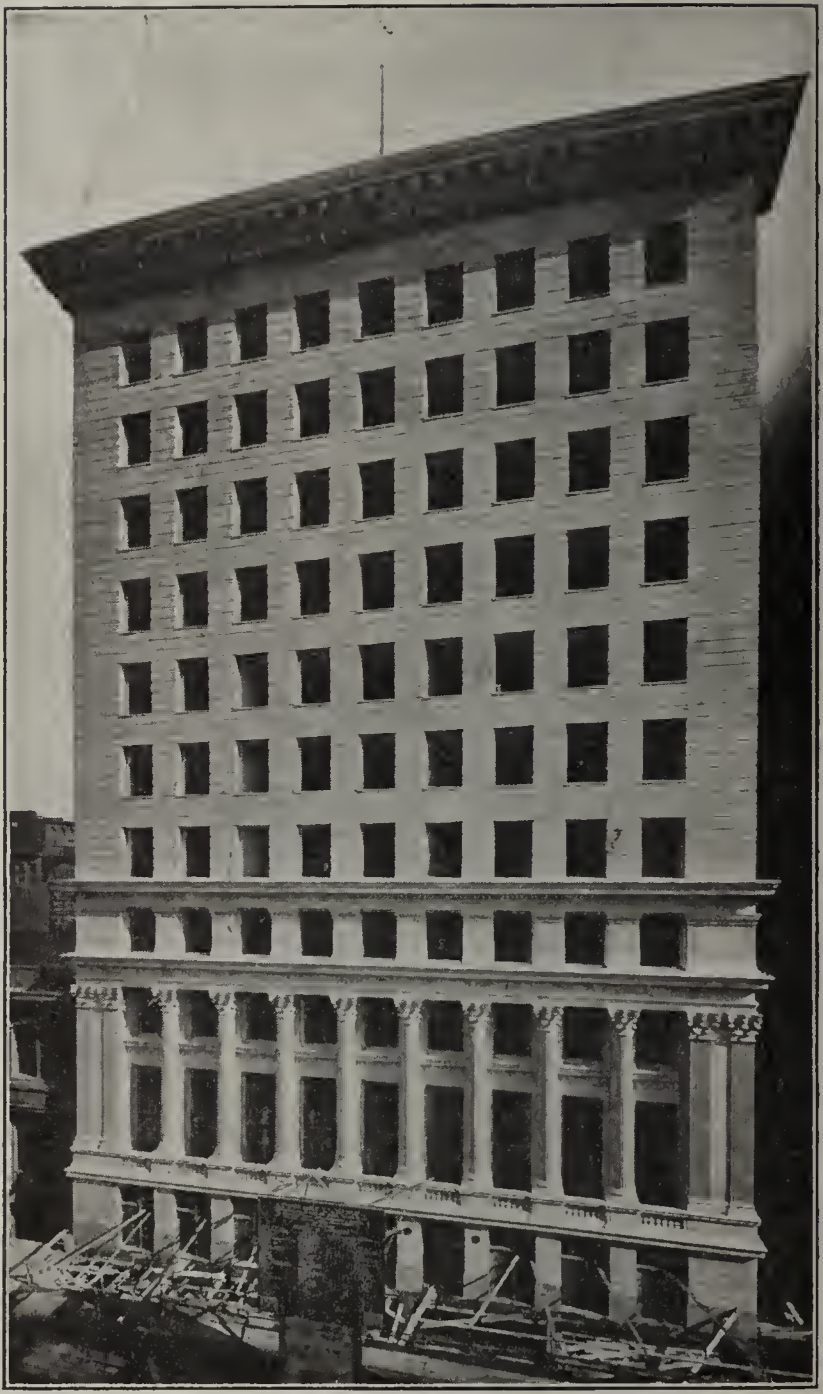
PULSOMETERS
Cost less to purchase, install and operate than any other type of brickyard pump. They handle gritty water and never need lubrication.
Write today for our "Pulsometer Handbook." It shows many novel installations and contains valuable data on pumping problems.
PULSOMETER STEAM PUMP CO., 13 Battery Place, New York, N. Y.
Chicago Office: 223-231 North Jefferson Street

WANT A SITUATION?
There is the right place for the right sort of a man somewhere. The problem is to get the two together. Our Classified Ad pages bring them in touch with each other.

COST-KEEPING
is being advocated by the organized Clay-Industry. As soon as you have found some of your burning costs exorbitant, send for a Frink Engineer with his
FRINK METHOD
THE FRINK PYROMETER CO.
LANCASTER, OHIO

San Francisco Skyscrapers

TWO SPLENDID EXAMPLES OF COAST ARCHITECTURE IN WHICH BURNED CLAY PLAYS A PROMINENT PART

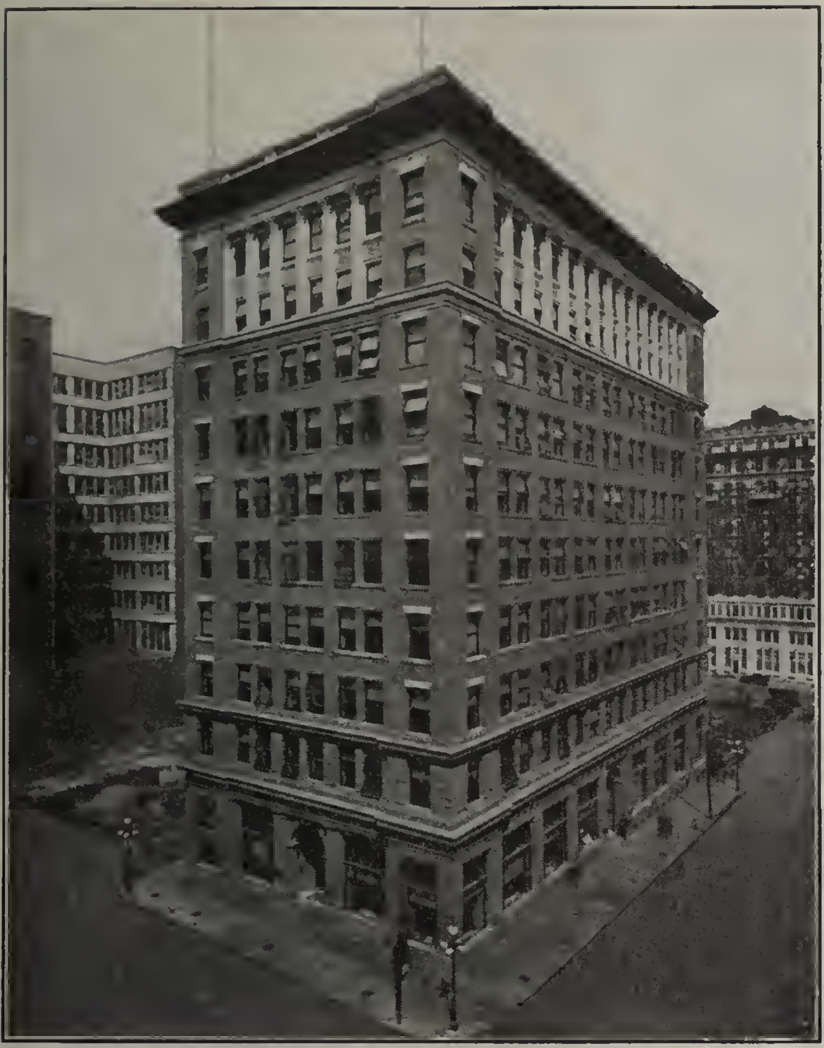


Insurance Exchange Building, San Francisco, Cal., Faced with Cream Matt Glaze Terra-Cotta.

While concrete has been used to a certain extent in San Francisco since the big fire of April, 1906, for the construction of cheaper buildings within the fire limits, the finer buildings are more and more confined to brick and terra-cotta, with, occasionally, a facing of granite or sandstone for the lower frontages.

Two of the finest buildings of recent years in the downtown section of the city are the Insurance Exchange Building and the Standard Oil Building. The Insurance Exchange is in the heart of the financial district at California and Liedesdorf streets and is a sort of twin building to the Merchants Exchange on the other side of Liedesdorf street. It is faced entirely with cream matt glaze terra-cotta furnished by Gladding, McBean & Co., at a cost of $51,000. Willis Polk & Co. are the architects of the building, which is just being finished.

The Standard Oil Building was completed and occupied this summer. It is located at Bush and Sansome streets, and is a ten-story brick and terra-cotta building



New Standard Oil Building, San Francisco, Cal., Built of Pressed Brick and Terra-Cotta with California Sandstone Facing the two Lower Floors.

with the two lower stories faced with California sandstone. The clay materials on this building were also supplied by Gladding, McBean & Co.

FEDERAL POTTERY PROBE GOES DEEP.

Investigation Covers Cost and Profit on Wholesale and Retail Sales as Well as Manufacturing.

The Federal investigation of the domestic pottery business will be far more extensive and deeper than the general public generally supposed it would, when the probing started in the East Liverpool, Ohio, potteries some months ago. Not only are the investigators interested in the manufacturing end of the proposition, but the sale of the ware over the counters of the jobbers and retailers is to be gone into. This part of the work of the government has just come to light.

While the Washington investigators were going over the books of the pottery companies, other experts were going over the mechanical departments. Now comes the selling end, all of which will make the Federal investigation of the domestic potteries one of the most far reaching ever planned.

Many of the Federal probers who have been working in the East Liverpool district have returned to Washington, where the data these men have procured will be tabulated. When any detailed report will be made, if ever one will be, publicly, no one can say. While the bulk of the probing has been completed, the Government will still meet, now and then, with the manufacturers, either as individuals or as members of the United States Potters Association. That the tariff experts have been given every courtesy both by the Eastern and Western pottery manufacturers, no one can deny.

OIL BURNERS FOR BRICK KILNS
THEY INSURE
EVEN { BURNS COLORS
LESS { OIL TIME COST
ADJUSTABLE TIP
THOUSANDS in USE
WRITE TO
SCHURS OIL BURNER CO.
LOS ANGELES, CAL., U. S. A.

"FREEFLOW METAL"
Freeflow Metal
H. W. GERLOCK — HUNTINGDON, PA.
The Name
"FREEFLOW METAL"
itself implies something—but its use proves more. It is remarkably durable and its initially good qualities last through out, until it is worn down to the thinness of paper.
It is anti-friction, has practically no shrinkage and is a glutton for heavy pressure and high speed.
H. W. GERLOCK, Huntingdon, Pa

"Buckeye Rails Are the Standard for Quality"
THE BUCKEYE ROLLING MILL COMPANY
Exclusively Manufacturers of First Quality Light Steel Rails and Accessories
Offices: Steubenville, Ohio
Mills: Newark, Ohio
BUCKEYE MEANS BEST
BEST MEANS BUCKEYE
All Sections from 12 lb. to 40 lb. per yard
Write or wire us, when in need.
No order too large to handle promptly or too small to secure immediate attention.

PERFORATED METAL SCREENS
As required for BRICK MAKERS USES.
PERFORATED SHEET METALS OF EVERY DESCRIPTION
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Triumph Steam Brick Dryer

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We make Kiln Bands, Kiln Band Lugs, and Grey Iron Castings for Grinding Pans. Special Foundry Orders are a Specialty. Submit sketch or specifications.

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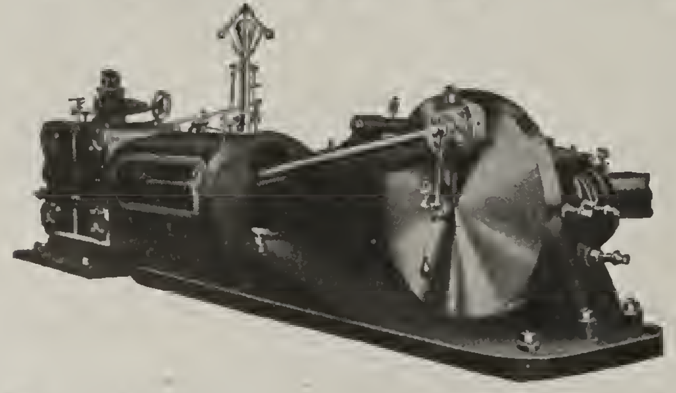

Send for Catalogue No. 65-B

Murray Iron Works Co. Incorporated Feb. 1, 1870 BURLINGTON, IOWA

Pottery

A strike that may lead to serious labor trouble among potters, was declared by the clay makers' union Thursday, Oct. 29. All of the potteries in East Liverpool and Wellsville, Ohio, as well as at Newell and Chester, W. Va., are affected. The strike followed a demand for an increased wage of from 33 to 44 per cent, which demand was formulated in a remarkable letter addressed by the union officials to the manufacturers, the text of which is given in full:

> "To the Honorable Pottery Manufacturers of East Liverpool, Wellsville, Chester and Newell.—Gentlemen: We, the committee of the Independent Clay Makers Union, take this method of correspondence to inform you of our demands, which as a united body, is the best course. With this method every manufacturing potter can readily understand with precise certainty what the men of this union are demanding. About 12 years ago Local No. 21 of the National Brotherhood of Operatives (clay makers) received an advance from a common day wage to one of piece work at one cent per leaf of clay. Since then we have asked for no advance whatever. We now find that it is almost an impossibility to live on the present wage scale and pay our honest debts. Rents have soared upward, food stuffs are triple to what they were twelve years ago, wearing apparel likewise. Pleasures have gone beyond our paltry purse strings. What can we do, or expect to do? Everything else has advanced in price, but our wages remain the same. It makes no difference how economical we are or how hard we try to make shift, our women and little children have to suffer for want of proper food and clothing. We are not spendthrifts and drunkards, therefore cannot blame drink for inability to make a proper living and educate our children. All we ask is a fair proportion of our earnings. You, as a manufacturer can realize how hard, dirty and heavy our work really is. No other branch of the trade can compete with it in tediousness. And is also a very important unit in the potting trades. Taking everything into consideration, no other branch of the trade deserves an advance in wage more than the clay makers. Nine-tenths of all the clay makers and helpers are of the same opinion. We, as a body, bring the following demands to your notice, and trust you to consider the matter well and at all angles before you give your final decision. Our united demands are as follows: All clay making to be on a piece work basis at $1 per press of 72-chambers or less, when more than 72 chambers, a proportional increase. Clay to be made, pugged once, and delivered to elevator. All lawns to be put on at expense of company; all machinery to be kept in repair by company; all press sacks or cloths where dipped, to be at expense of company. Trusting for a just and considerate reply to above demands by a committee appointed from your ranks in 15 days, or not later than Oct. 15, 1913."

The Independent Clay Makers' Union was formed very recently, and is not recognized by the National Brotherhood of Operative Potters. As a consequence, it is thought that no general strike will be ordered, if the manufacturers decide to fill the strikers' places with non-union operatives. On the other hand, Kilnmen's Local Union No. 9, of the National Brotherhood, smarting under the lash of the wage adjustment reached by the conference committees of the manufacturers and operatives, has threatened to withdraw from the National Brotherhood, and if this happens, it will complicate the situation and may result in a general tie-up. Kilnmen's Local Union No. 9 is the largest local union connected with the National Brotherhood, and efforts are being made by the parent organization to keep it in line until February 1, 1914, at which time, the wage scale will once more be under discussion. The Kilnmen's Local, however, has thrown down the gauntlet, and has started a petition asking for the distribution of the funds of the National Brotherhood, which are estimated by some to be close to $500,000. Before any such action can be taken, at least five other local unions must agree to the proposition, which will then be submitted to the officials of the National Brotherhood, and later, submitted to a referendum vote of the operatives. This will all take time, and it is thought that the entire matter can be held in abeyance until the date set by the joint conference committees, when a better judgment as to the results of the lowered tariff can be obtained by and from the manufacturers.

The joint conference, at which action was taken that has brought the trouble that now impends, was held in the parlors of the Hotel Astor, in New York City, Oct. 15, between the labor committee of the United States Potters' Association and the conference committee of the National Brotherhood of Operative Potters. It ended Oct. 23, when an agreement was reached between the manufacturers and employees to continue work on the old wage scale.

But, the signing of the old scale with some slight variations, is tentative upon the "workings" of the new tariff bill. The New York agreement can be opened by either side not later than February 1, 1914, by the giving of sixty days' notice to the other side, but not later than August 1, 1914. If the agreement is not opened by the latter date, it will remain in effect for two years, dating from October 1, 1913.

The operative potters, at their Atlantic City convention, held last July, formulated 27 demands, the majority of which were for increases in wages.

After these were presented to the pottery manufacturers, a general meeting was held at the Fort Pitt Hotel, Pittsburgh, Pa., and 25 counter propositions were listed. These were sent to the conference committee of the workers, and it is the first time since 1905 that the manufacturers have asked anything from the latter. The asking has always been on the other side.

It is related upon the highest authority, that none of the propositions presented by the workers was granted by the manufacturers, especially those demands which would result in the cost of manufacturing being increased. While the New York agreement has not been presented publicly, and likely will not be before the annual meeting of the United States Potters' Association, some minor amendments to the 1911 agreement have been announced as follows:

Providing for two weeks' notice of resignation or discharge; for cubic foot measurement for drawing of glost kilns; for appointment of committees to investigate conditions surrounding work of kiln firemen; for uniform decorating scale for Sebring (Ohio) potteries; fixing eight cents as the price to be paid per dozen for turning of "Florence" or "Dairy" mugs.

In these changes, the manufacturers are not compelled to pay any increased wage. That some of the local unions will be opposed to the new agreement goes without saying, but the thinking members are satisfied with the outcome.

The joint conference committee was composed of the following:

Manufacturers.—W. Edward Wells, of the Homer Laughlin China Company, chairman; W. L. Smith, of the Taylor, Smith & Taylor Pottery Company; Hal N. Harker, of the Harker Pottery Company; Thomas Anderson, of the Edwin M. Knowles China Company; George C. Thompson, of the Thompson Pottery Company; T. A. McNicol, of the Potters' Co-Operative Company, of East Liverpool, Ohio; Frank A. Sebring, of the Sebring Pottery Company, of Sebring, Ohio, and A. G. Dale, of Trenton, N. J.

Workers.—Edward Menge, president of the National Brotherhood of Operative Potters, of East Liverpool, Ohio, first vice-president; Frank H. Hutchins, Trenton, N. J.; national secretary John T. Wood, East Liverpool, Ohio. Other members of the Brotherhood committee, picked from the various locals were: John Stead, W. H. Pyles, W. H. Moore, Alex Young, Frank Gratton, Louis Driber, William McPhail, Arthur C. Townley, William Young, John Shingler,

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Hoop Lugs made by Caldwell
will never slip or give way. They are the only "positive grip" lugs on the market. This lug does not depend on friction to hold it, as other lugs do.
Our catalogue of Tanks and Hoop Lugs, contains illustrations giving full details. Let us send you a copy and make you prices.
We can ship promptly.
W. E. CALDWELL CO., Inc. Louisville, Ky.
Tanks (*Steel-Wood*) Towers (*Galvanized*)
Wind Mills—Pumps—Gas Engines

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RICKETSON'S MORTAR COLORS
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are acknowledged to be the best choice for *everybody*. Best for the architect because purest. Best for the contractor because they go farther. Best for the owner because they never change their color.
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Absolute Control of Temperatures in all Kinds of Kilns and Furnaces
Heraeus Le Chatelier
PYROMETER
Recommended by the highest authorities
For measuring temperature between 0 and 1600 deg. Celsius, equal to 2920 deg. Fahrenheit. Successfully used in establishments for the manufacture of Brick, Pressed Brick, Terra Cotta, Pottery, Porcelain, Stoneware, Chamotte, Cement, Glass, Iron and Steel and other metals, particularly for Hardening and Annealing, also for Molten Metals, Cartridges and Ammunition, Chemicals, Gas Accumulators, and by Boiler Inspectors, Schools and Colleges.
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of every description. This Heraeus Patented Fused Quartz Glass is not affected by any changes of temperature whatsoever, and the co-efficient of expansion is only 1-17 that of platinum. It is of the utmost importance for all purposes where the above qualities are essential. Write for information. Pamphlets and References on Application.
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IS THE FIRST STEP TOWARD
A PERFECT PRODUCT

YOU NEED ONE ON YOUR PLANT

THE RUST
CLAY FEEDER

INSURES THE EVEN MIX
AND DISPLACES LABOR THAT COSTS GOOD MONEY BUT DOES POOR WORK.

ASK US TO SHOW YOU WHY

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INCREASES CAPACITY — IMPROVES PRODUCT
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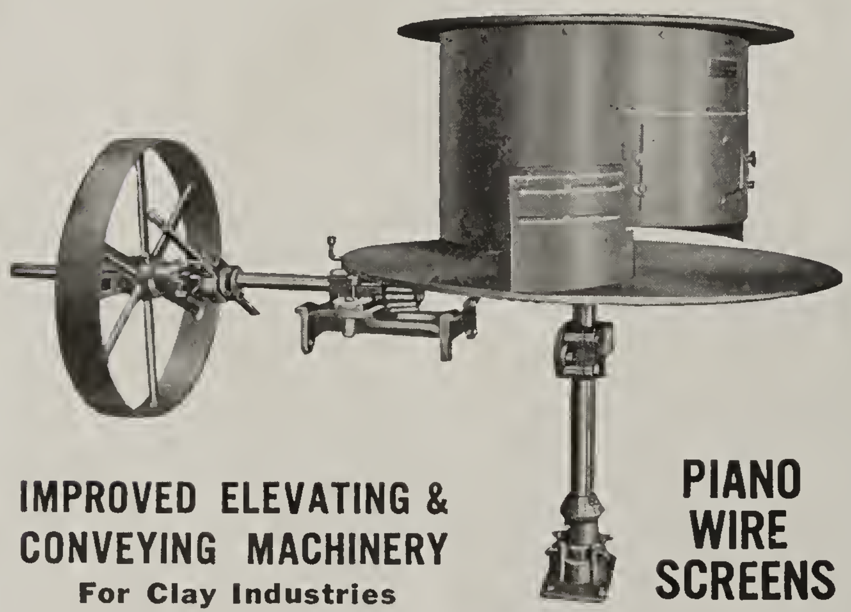

IMPROVED ELEVATING &
CONVEYING MACHINERY
For Clay Industries

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SCREENS

Send for Catalogues
The Ceramic Supply & Construction Co.,
Columbus, Ohio

E. J. Whitehead, Samuel Burgess, Frank Connelly, William Denning, Jacob Smurthwaite, Joseph Heckathorne and William Cross.

K. P. Snyder, of the Louisville (Ky.) Pottery Company, reports the call for stoneware jugs as becoming more brisk; for a while it looked as though the jug manufacturers would have to shut down or turn their plants on some other ware, but the danger seems to have passed and the demand is opening up strong for a good jug season. Stoneware jars are a little slow, but flower pots are selling well, orders being taken for Spring delivery at a rate that indicates a full Winter's run.

William I. Pullen, John Connelly and J. G. Gaze, of Trenton, N. J., who operate a porcelain manufacturing plant near Trenton Junction, along the P. & R. railroad, will start a new plant in Trenton, for the purpose of manufacturing electrical porcelain appliances and automobile spark plugs, if the Trenton Chamber of Commerce will secure subscriptions to part of the bonds that will be issued by the new company which it is expected they will form.

Grafton, W. Va., raised $37,500 in a four days' campaign to furnish the necessary funds to bring the pottery of the Consolidated Manufacturing Company from East Liverpool, Ohio, to the West Virginia city. Construction on the new plant will be started at once. The buildings will cost upwards of $100,000. It is said that the monthly payroll will be in the neighborhood of $13,000.

The Novelty Clay Forming Company, of Newell, W. Va. Capital $25,000. Incorporators, George S. Howard and J. A. Newell, of Newell; R. L. Singer, S. E. Anderson and Eva L. Howard, of East Liverpool, Ohio. This company will manufacture tips and rings for gas mantles and porcelain for electrical purposes.

Herman and Kenneth Markham have secured a site near the California China Products Company's property at National City, Cal., and will establish a factory for the manufacture of pottery. Mr. Markham is the creator of the famous Markham pottery, a ceramic product that has many exclusively unique features.

With a capital stock of $100,000, the Oxford Pottery Company is being formed at Cambridge, Ohio, by A. R. Murray, of Cambridge. Three and a half acres have been bought as a site for the new plant, which will have five kilns.

The Commercial Club of Muskogee, Okla., has a plan under advisement which contemplates the bringing of a six-kiln pottery from East Liverpool, Ohio, to Muskogee.

American China Clay Company, Wilmington, Del. Capital $30,000. E. D. Buck, G. W. Dillman, B. M. Crawl, all of Wilmington.

The Potomac Pottery Company is a new concern that will be located at Keyser, W. Va., manufacturing sanitary pottery.

The Jones Holloware Company of Baltimore, Md., will erect a new enameling house.

ST. LOUIS GOOD ROADS EXPOSITION.

Coming Exposition and Convention Will Attract Attendance of More than 50,000 November 10-15.

The United States Good Roads Association will hold its convention and exposition in St. Louis, Mo., November 10th to 15th inclusive. As many of the more practical good roads advocates favor brick paving, the exposition will give considerable space to the promotion of paving brick, the proper methods of laying them, the various machines used in their manufacture, etc., etc. From information already received by the management, it is believed that more than 50,000 people will visit the exposition, a large proportion of whom will be good roads boosters, with influence, not only toward the building of better highways, but to the use of the best paving material,—which, as has been remarked elsewhere in this journal—is unquestionably paving brick.

The Letter Box

The Hebron (N. D.) Fire & Pressed Brick Company writes that it is enlarging its plant and will be in the market for the following equipment:

- A full stiff-mud machinery outfit with capacity of 35,000 brick per day.
- Electrical machinery, direct connected, for all stiff-mud machines.
- Electrical machinery, direct connected, for present dry-press equipment, 25,000 daily capacity.
- Two 150-lb. pressure boilers.
- One Corliss engine with direct connected 350 h. p. generator.
- Dry-pans, dryer cars and dump cars.
- About 1,000,000 common brick.
- A large quantity of lumber.

A notice regarding the above has been sent to "Brick and Clay Record" advertisers in the "Service Bulletin" and is now published to give our readers a chance to communicate with the Hebron Fire & Pressed Brick Company, in case they be interested in figuring on any part of the attractive list of "Wants" outlined. Do not overlook the chance of selling that 1,000,000 common brick.

Common Brick

Alfred Kleymeyer, superintendent of the West Point Brick & Lumber Company, of West Point, Ky., made a trip to Chicago, recently, with his newly made bride, who was Miss Cora Dickman.

The plant of the Coast Clay Company, heretofore located at South Bellingham, Wash., is soon to be removed to Chuckanut Bay, where larger and more available clay deposits are controlled by the company.

The Santa Barbara Unit Brick & Tile Company has been incorporated with a capital stock of 50,000 to engage in the brick business at Santa Barbara, Cal. The incorporators are: A. A. Lewis, G. L. Robbins, J. F. Moore, E. F. Edwards and R. B. Canfield.

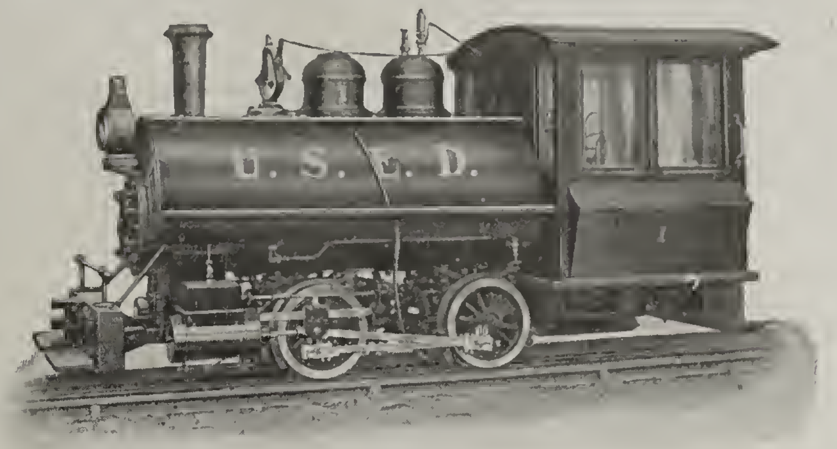
L. A. Steiger, a well known San Francisco brick maker, is one of the incorporators of the San Francisco Burned Clay Concrete Company, an organization which has for its chief purpose the utilizing of broken and other second hand brick in the making of concrete for use in and about San Francisco. The company has a capitalization of $50,000.

The old time yard of the Simons Brick Company of Los Angeles in the millionaire residence city of Pasadena, Cal., which has been the subject of a great many protests on the part of the residents of that place, is at last to be subdivided and sold out for residence purposes. It has become evident to the owners that the property is now far too valuable to be held longer as a brick yard.

The Louisville (Ky.) Builders' Supply Company has bought out the Milliken Sewer Pipe Company and will handle the full line formerly carried by the Milliken concern, which was agent for the Cannelton Sewer Pipe Company, in Louisville. Henry Bosquet, president of the Milliken corporation, has caused a notice of dissolution to be filed.

The Merchants' Traffic Association of Los Angeles, acting for the several brick manufacturing companies of Southern California, has begun an action before the California State Railroad Commission to secure lower rates on shipments of clay from Alberhill and Corona to Los Angeles. The present rate per ton is $1.50 from Alberhill to Los Angeles and $1.25 from Corona to Los Angeles, and the rates sought to be established are, seventy-eight cents from Alberhill and sixty cents from Corona. The companies seeking the reduction are: The Pacific Sewer Pipe Company, the Independent Sewer Pipe Company, the Los Angeles Pressed Brick Company, the Inglewood Brick & Clay Company and the St. Louis Fire Brick & Clay Company.

CLAY HAULAGE
Reduce costs of transportation by using a
Davenport Industrial Locomotive



Small Size—Reasonable Cost—Especially built for use of clay-products manufacturers, for hauling clay or shale from pits or mines to plant.

Cheaper Than Horse Transportation

and will reduce costs of delivering your material to your plant, thus increasing profits.

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Write us for particulars

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St. Paul: 1308 Pioneer-Press Bldg.
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Pittsburgh: 405 Oliver Bldg.
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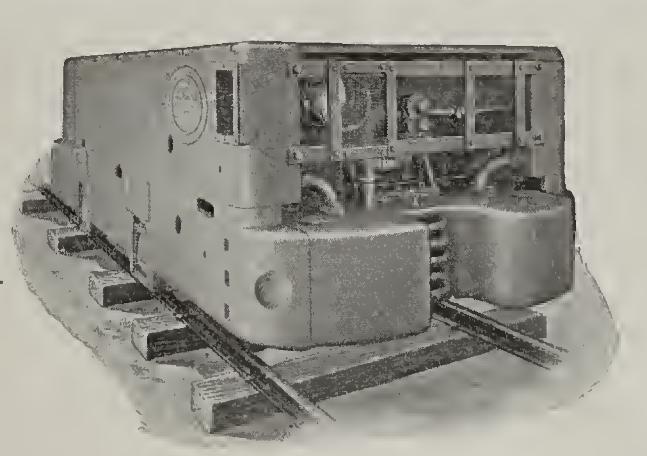

Over 300 in Use—
Used by 150 Companies.
Used for Underground
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Surface Haulage—
2½ to 16 Tons Weight.

Geo. D. Whitcomb Co.
Rochelle, Illinois

5/8 Yard Revolving Shovel in Clay Pit, Woodland, Ill.

THE LABOR QUESTION

is a very serious one with you, if your men go on strike—if they are continually laying off; if they leave you at the most critical moment. The key to the situation seems to be the use of labor-saving devices.

The little **Marion Revolving Shovel** shown above may solve your excavating problems. Why not write us today for information.

We build steam shovels in all sizes from the smallest to the largest.

The Marion Steam Shovel Co.
Station A Marion, Ohio

WATCH THE BUCYRUS DIG!

Bucyrus Revolving Shovels

have been designed with careful study as to the demands and requirements of

Brick and Clay Plants

They are stronger, faster and more flexible than any other type of shovel built.

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P.O. Box A. **South Milwaukee, Wis.**
New York Chicago Duluth Birmingham
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Floor and Wall Tile

In the new Davenport Hotel, which is being built in Spokane, Wash., its owners are going in strong for ceramic tile. In the bath rooms alone, 240,000 pounds of these tile will be used, or more than six carloads. The cost will be upwards of $25,000. This tile order is claimed by tile manufacturers to be the largest ever placed West of the Mississippi river. In the bath rooms the tile will be laid in herringbone, the units measuring five-eighths by seven-eighths and half an inch by one inch. They will be white, with a border of silver gray. The wainscot will also be white, the tile units being three inches by six inches, four by four and six by six inches. This elaborate and extensive use of tile will be made an advertising feature of the new hotel, it being planned to have 350 private bath rooms finished in the manner described.

Fire Brick and Refractories

According to the United States bureau of standards the melting points of fire brick are as follows: The most common fire brick, or those made of clay of which the main ingredient is kaolin, will melt at a temperature ranging from 2,831 to 3,137 degrees F.; bauxite brick, from 2,949 to 3,245 degrees; silica brick, from 3,092 to 3,101 degrees; chromite brick at 3,722 degrees, and magnesite brick at 4,929 degrees. These melting points, which represent the lowest temperature at which a small piece of the brick could be distinctly seen to flow, were determined in an electric vacuum furnace, the temperature being measured with an optical pyrometer.

The large brick stack at the Niles (Ohio) Fire Brick Company's plant was moved 21 ft. 3 in. without mishap. The removing of so large and unwieldly a piece of brickwork was a task to stagger many men, but under the guidance of P. J. Sheehan, superintendent for the Niles Fire Brick Company, it was brought to a successful issue. The stack weighs 118 tons, is 6 ft. 6 in. square at the base and measures more than 76 ft. in height. The change was made necessary to secure room for the installation of additional machinery, which will increase the horsepower of the engines and the output of the plant.

Laclede-Christy of St. Louis, Mo., has issued a booklet showing the uses and practices to which its brick is adapted. It is well compiled and the information is authentic, so far as the reports of service and results of Government tests are concerned. Since so little has been published about fire brick that is of any real use to the engineer, this booklet comes as a welcome guest to the desk of the man who wants to know what kind of refractory material will best suit his needs.

From Martinsburg, W. Va., comes the report that a company of men from Pittsburgh, Pa., will, in the near future, erect a silica brick works at Brook's Mill, near Martinsburg. In connection with this report is the statement that Peter S. Duncan, of Martinsburg, has sold his ganister plant for $25,000 to the new company.

George S. Good, president of the Patton Clay Mfg. Company, the George S. Good Fire Brick Company, the Clearfield Sewer Pipe Company, the Good Clay & Coal Company and the Margaret Smokeless Coal Company, all of Patton, Pa., died at his home in Lock Haven, Pa., Tuesday, Oct. 14, 1913.

The Mack Manufacturing Company, of New Cumberland, W. Va., has installed a clam shell and derrick at its Etna plant, which is to be used for the unloading of coal cars. The saving to the company as a result of this improvement will amount to several thousands of dollars annually.

With a capital stock of $60,000, the Vulcan Refractories Co., of Latrobe, Pa., has been formed. The incorporators are F. B. McFeely, E. R. Marburg and Ira J. Shellenberger, all of Latrobe, Pa.

F. R. Minton, salesmanager of the Mexico (Mo.) Fire Brick and Clay Company, returned to the plant recently, after an extended trip through the Northwest. "Dick," as he is familiarly known in the trade, reports conditions promising in the Twin Cities and Duluth.

Face Brick

Members of the American Face Brick Association have been sent a notice, calling their attention to the fact that Louis D. Brandeis, famous in this country on account of his theories of "scientific management" for railways, has been appointed by the Interstate Commerce Commission to present arguments against the application of the Eastern roads for a horizontal increase of 5 per cent in freight rates. Concern has been felt in some quarters over this appointment because of an impression that Mr. Brandeis' views on railroad management, when he testified before the commission two years ago, had much to do toward influencing the decision of the commission not to allow the increase in rates on that occasion. As a matter of fact, Mr. Brandeis' "scientific management" theories were rather cavalierly dismissed by the commission and the refusal of the previous request for higher rates could hardly have been based on that portion of the testimony. If the railroads have a good case in their favor, and win it with Mr. Brandeis in charge of the argument for the shippers, the moral effect of the victory upon the public will be very pronounced. It is not illogical to suppose that the appointment of Mr. Brandeis in the present instance should be welcomed by the railroads rather than otherwise.

T. J. Murray, formerly with the Warren B. Ferris Brick Company, of Columbus, Ohio, and recently engaged by the Thompson-McDonald Lumber Company, of Minneapolis, Minn., to take charge of its newly formed face-brick department, reports the closing of an order for 400,000 "Bradford Reds" for the new Ford Motor Car Company's Minneapolis building. "Tom," as he is familiarly known to hosts of good fellows in the brick business, reports that a new office will be opened in St. Paul, Minn., very shortly, the work of the twin cities being too widely scattered to be properly served by an office located in one city or the other. He states that the new department is now properly organized and that he has every reason to believe that the new venture will be a huge success.

An automobile, belonging to Donald McDonald, Jr., of the R. B. Tyler Company, of Louisville, Ky., which was stolen from in front of Mr. McDonald's residence, about a month ago, was found, completely demolished, near Nashville, Tenn. A few of the brick men who have been fortunate enough to enjoy rides with Donald, have wondered why it was not completely demolished—in Louisville—some time since. Be that as it may—the R. B. Tyler Company has furnished 75,000 face brick, manufactured by the Western Brick Company, of Danville, Ill., for a residence on Cherokee Drive and 50,000 "Bradford Reds" in the Vreeland residence at Frankfort, Ky.

Despite the protest made at a recent meeting of the Face Brick Dealers' Association, regarding the tendency on the part of certain manufacturers of face-brick to open "direct sales" offices, another concern of this kind has been started in Cleveland, Ohio—the second in that city." The Euclid Brick & Supply Company held a "housewarming' in its new offices in the Leader-News Building, October 25, having been in its new quarters about three months. W. F. Eirick, formerly county commissioner, is president of the new company; J. J. Rowe is general manager; Warren B. Ferris, of the Warren B. Ferris Brick Company, of Columbus, Ohio, is vice-president and C. E. Griese, secretary-treasurer.

San Francisco brick men are now figuring on the cream glazed terra cotta and yellow matte surface brick to be used in the erection of two new apartment houses to be erected at the corner of Post and Leavenworth streets in that city. Some of the construction contracts for the buildings have already been let.

The Western Brick Company, of Danville, Ill., is about to erect its third plant, the latest one being located on the Danville Belt Coal Company's land, adjoining what is known as Highlands. The project is under the direction of Frank W. Butterworth, general manager of the Western Brick Company, Danville, Ill.

The Coast Clay Company of Bellingham, Wash., contemplates the removal of its plant from South Bellingham, to Chuckanut Bay, Wash., where it owns large shale deposits, suitable for manufacturing brick. The proposed new plant will have the latest machinery and cost about $100,000.

WHY USE GRATES? DO YOU WANT TO WASTE FUEL?

When your Fuel Problem is solved you will have the secret of making the plant pay. Come out of the rut. Fall in line with the march of progress.

JOIN THE HAPPY BAND AND INSTALL THE

Grateless Gravity Feed Fire Box

It means a Saving of at least 25 per cent in coal tonnage and permits the use of the cheaper grades of coal. It assures complete, perfect combustion in the kiln.

HERE IS WHAT ONE USER SAYS:

Mr. Paul Beer,
Des Moines, Iowa.
June 12, 1913.

Dear Sir:—

Regarding the Grateless Gravity Feed Fireboxes, in which you are interested, it might be of interest to you to know what we are doing and what we think of the work of the kilns equipped with these fireboxes.

With this kind of box, we are able to use a lower grade of coal, mine run or Iowa steam, at a less cost than with the old style sloping grate. We find that there is a saving of 20 per cent in the fuel cost with one or two days' less time in burning, and a more uniform product in quality and color as compared with the former ware burned with the sloping grate. These items all tend to reduce the cost of the ware and increase the value which makes the Grateless Gravity Feed Firebox a very necessary improvement over the old style grate.

Wishing you success with this new proposition, we beg to remain—
Yours very truly,

BOONE BRICK, TILE & PAVING CO.
A. B. Scott.

Fortunes are being made in other industries by the use of By-Products and the elimination of waste. Your fortune may lie in the direction of Fuel Waste. Would it not be well to investigate? Write Now!

GRATELESS FURNACE CO.
P. O. Box 685 DES MOINES, IOWA

To Prevent Scum Appearing on Your Brick, Terra Cotta, Etc., Use

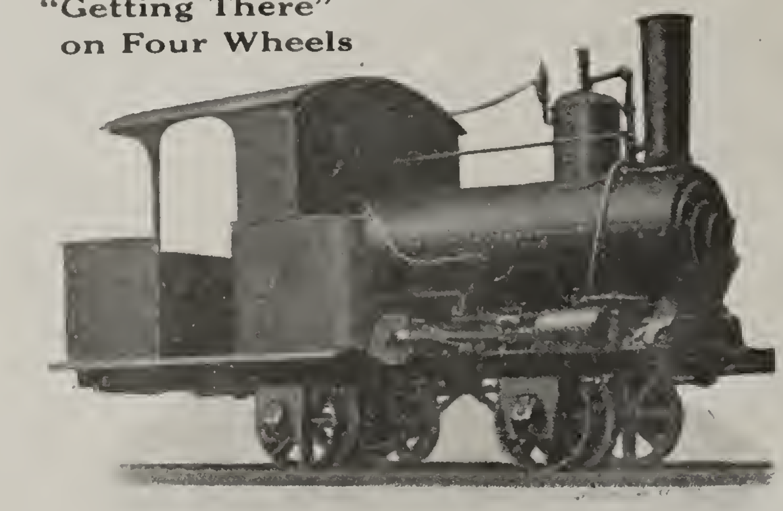
R. H. Precipitated Carbonate of Barytes

Literature on Application

Other High Grade Chemicals For Clay Industries

The Roessler & Hasslacher Chemical Company
100 William Street, New York

"Getting There"
on Four Wheels



THE DEWEY 5-Ton Locomotive

Costs $1200 About as Much as a Good Team of Mules

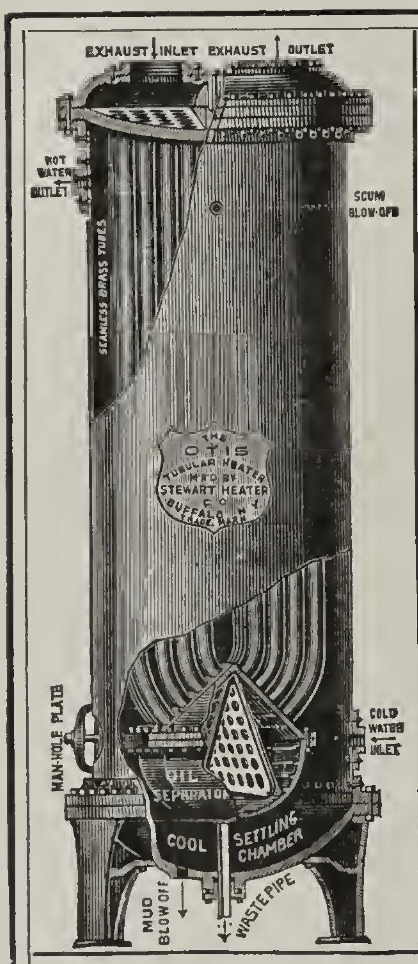
It Never Balks on Heavy Loads or Grades

It pulls a full load under every condition and on any track. Does more and costs less than any type of Standard Locomotive of same size and power.

"Let the Dewey Do Your Work"

Write for descriptive literature and "reasons why" you will save money by having the Dewey in your plant.

DEWEY BROS.
GOLDSBORO, N. C.



THE OTIS

Tubular Feed Water Heater, Oil Separator and Purifier

is not an experiment but a tried and trusted appliance that the makers are not afraid to

GUARANTEE

To heat the feed water to the *boiling point* (210 to 212 degrees) with the exhaust steam without causing any back pressure, *also to extract the oil from the exhaust*, so that the exhaust steam after being passed through the heater can be used for other heating purposes, and the water of condensation for the heating system be returned to the boiler without the *additonal expense* of an *eliminator*.

We are so sure of the OTIS that we agree to pay all cost of a trial—freight, cartage, piping, etc.—if it fails to do all we claim for it.

Catalogue and Prices at Your Service

The Stewart Heater Company,
33 EAST DELEVAN AVENUE · BUFFALO, N. Y.

Fiske & Company, Inc., of New York and Boston, has given its Chicago representation to the S. S. Kimbell Brick Company, and a new office and show room, devoted exclusively to "Tapestry" and other rough textured face-brick, is being installed on Michigan Avenue, south oi the Blackstone Hotel.

A new company has been organized at Comanche, Tex., with a capital stock of $15,000 to manufacture face brick. H. Burks has been elected president, J. C. Henderson, secretary, and E. E. Antony, treasurer.

The directors of the Chanute (Kas.) Brick & Tile Company have agreed to the expenditure of a sum close to $50,000 to rebuild the plant that was destroyed by fire Sept. 26.

The Brazos Brick & Tile Co., of Rosenberg, Tex., is making improvements that will cost $50,000. The plant is under the management of T. C. Boyd.

At the National Conservation Exposition, held in Knoxville, Tenn., recently, the Sibley-Menge company had a very interesting exhibit.

The Seattle Enamel & Moss Face Brick Company has been incorporated at Seattle, Wash., to engage in making face brick.

GOVERNMENT ADVICE ON ROAD BUILDING.

Department of Agriculture Equipped to Give Authoritative Information on Proper Methods and Materials.

Logan W. Page, director of the office of public roads of the Department of Agriculture, states that there is no longer any excuse for a community's building the wrong kind of road, as the Department stands ready to furnish any information that may be desired as to the proper kind of road to fit the peculiar needs of any section of the country. He adds that the United States government has now advanced in the problem connected with road construction, to a stage where efforts are being made to prevent the expenditures of public moneys, state or county, on certain types of roads that may result in what is practically a total loss.

A road built of materials that would be ideal in one locality, may not serve the purpose at all, elsewhere, he says, and the money expended may bring scarcely any result in reducing the cost of hauling, or of making it easier for the farmer to bring his crops to a shipping point. Millions of dollars, he claims, have been wasted in the past, because of the absence of the scientific knowledge that may now be obtained, gratis, through the department. Director Page, in discussing the new scientific movement in road building and improvement, has this to say: "There are two ways in which the engineer may avail himself of the information necessary to proper selection of road material. The first and only certain one is to make an actual service test on the material under observation, and under the same conditions of traffic and climate as those to which the proposed road will be subjected. This method, however, is impractical, except in certain rare cases, due to the lapse of time before definite results can be obtained. The second method is by means of short time laboratory tests, to approximate as nearly as possible the destructive agencies to which the material will be subjected on the road, supplementing the knowledge thus gained by a study of the results already obtained in practice on materials of a similar nature."

NEW CLAY COMPANY AT LITTLE GAP.

The Standard Clay Company has been formed at Scranton, Pa., and the following officers have been elected: President, John B. Jordan; secretary and treasurer, Benjamin G. Eynon; general superintendent, W. R. Chapin. The headquarters of the company are in suite 516, Connell Building, Scranton. The mines and shipping point of this company are at Little Gap, Pa.

Sewer Pipe & Drain Tile

An election will be held at Stockton, Cal., in September, to vote on an issue of $600,000 bonds for sewer extension.

V. C. Morrison, of Franklin, Ind., is about to start a drain tile and hollow block plant at St. Cloud, Minn.

The city of Globe, Ariz., has plans for a sewer system under consideration, the estimated cost being $149,000.

Theophilus Bishop, of the Southern Brick & Tile Company, of Louisville, Ky., was recently elected to membership in the Louisville Rotary Club.

G. H. Galvin, who, for the past five years, has had charge of the sales department of the Sheffield Brick & Tile Company, has resigned to accept the position of general manager of the Rockford (Iowa) Brick & Tile Company.

Iowa's annual production of drain-pipe, at the present capacity of its numerous plants, would, if placed end on end, reach a distance of 25,000 miles. The total annual production represents 28 per cent of the total production of the country.

William Everingim, of Norwalk, Ohio, has taken over the drain tile plant at Bellevue, Ohio, which has been under the management of the Smith-Hess Company. It is said that the new owner will make extensive improvements.

The value of the sewer pipe produced in the United States during 1912 is reported by the U. S. Geological Survey as $12,147,677, as compared with $11,454,616 in 1911. Ohio was the largest producing state, with a value of $4,022,078. Missouri was second and California third.

J. D. Reeves and M. Connor, of the Owensboro (Ky.) Sewer Pipe Company, were in charge of an exhibit of sewer pipe, made in connection with the "Made in Owensboro" Exposition held there during the week ending Oct. 25. The pipe were shown in all processes of manufacture, from raw clay to the finished product.

The Louisville (Ky.) Brick Company has received a contract for 1,000,000 common brick for the new warehouse to be erected by the Julius Kessler branch of the Kentucky Distilleries Company. The brick are all made, but deliveries have not begun, owing to the bad weather. Joe Nevin, head of the Louisville Brick Company, says that he is running two 450,000 capacity kilns, one of which is about ready to fire.

Hollow Block

A dividend of one per cent on the preferred stock of the National Fire Proofing Co., was declared at a recent meeting of the board of directors of that company, which was held in the general offices at Pittsburgh, Pa. This dividend was made payable October 15.

Arising pheonix-like from the ashes of a fire that literally wiped out its plant, the Brunswick, (Mo.) Brick & Tile Company is rapidly getting into shape to produce material. Through the untiring work of Louis Kinkhorst, the owner of the majority stock, the wreckage has been cleared away and a new, modern plant is being installed. The main factory building is of brick, as are also the drying sheds.

Fires at Clayworking Plants.

The Batavia (Iowa) Brick & Tile Company's plant was destroyed, September 12th.

The Chanute (Kas.) Brick & Tile Company's plant had a $50,000 fire, September 22nd.

The British Columbia Pottery Co., of Victoria, B. C., was almost wiped out on September 29th. The loss is estimated at $75,000.

The "Martin" BRICK MACHINERY

Modern YARD SUPPLIES

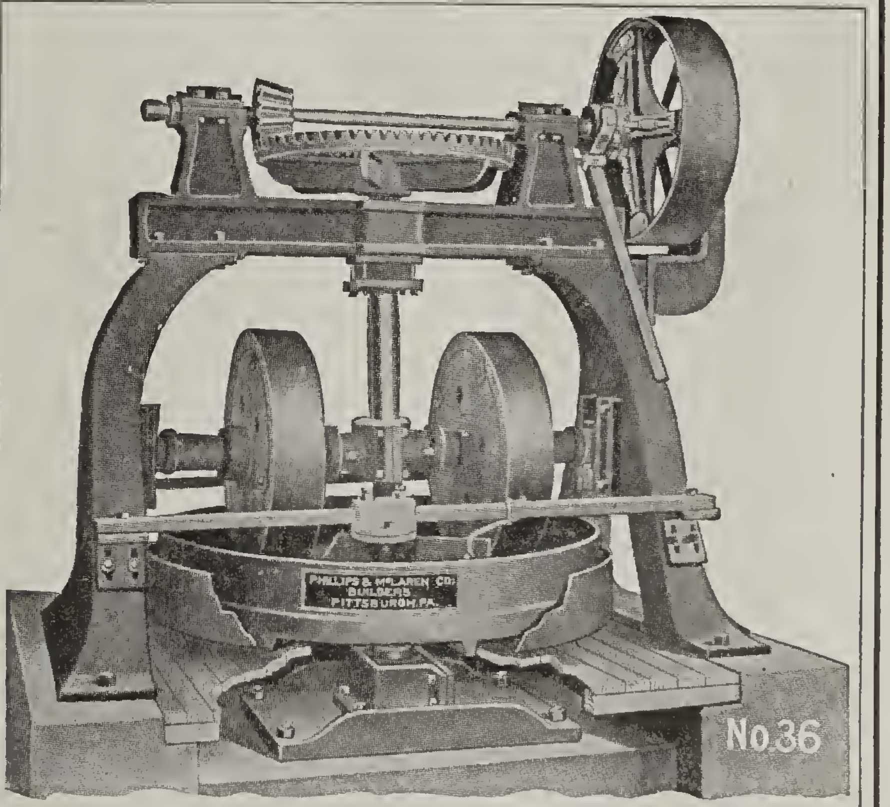
Soft-Mud or Stiff-Mud Processes
Get Our Plans
Dry or Wet Grinding Pans
Barrows and Trucks
Disintegrators
Clay Cars--Dryer Cars
Hoisting Drums

The Henry Martin Brick Machine Mfg. Co.

GET MARTIN PRICE LIST

LANCASTER PENNA. U. S. A.

GET OUR BIG CATALOG



PHILLIPS & McLAREN CO.
PITTSBURG, PA.
Builders of Pittsburg Standard Dry and Wet Grinding Pans, Rock and Ore Crushers
For BRICK, CEMENT, TERRA COTTA and All Kinds of REFRACTORY MATERIALS
When writing for Prices, state kind of Material and Capacity
Eastern Sales Office: Stephen Girard Building, PHILADELPHIA, PA.

Can You Afford

To pay freight from Spokane
on a slip superior to what
you have been using?

If so, We Can Deliver The Goods

At Five Dollars a Ton
F. O. B. Spokane.

Corundum Products Company
Spokane, Washington

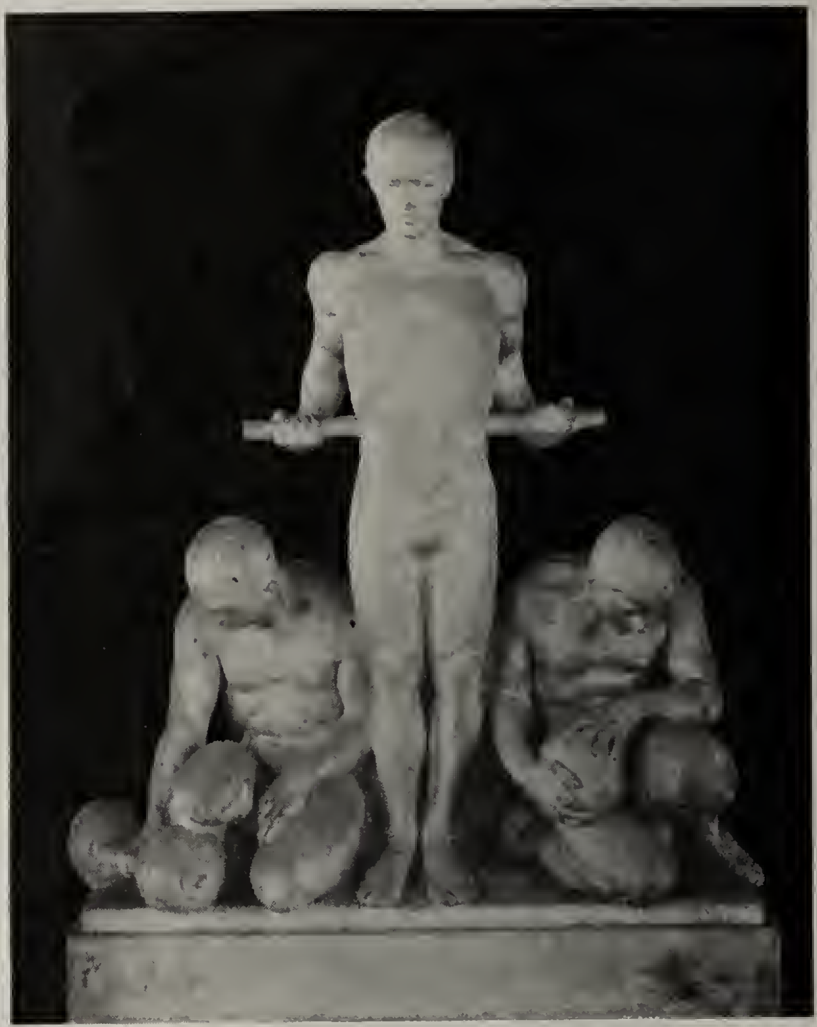
SECOND REASON WHY
"NESTOR"
IS UNEXCELLED FOR
BRICK PLANT WORK

ALWAYS PLIABLE, FLEXIBLE,
NEVER BECOMES HARD
LIKE A BOARD

DO YOUR BELTS CONTAIN
THIS FEATURE?

The American Fabric Belting Co.
Cleveland, Ohio

Architectural Terra Cotta



The illustration above is that of a terra-cotta group which stands over the main entrance of the Los Angeles (Cal.) Athletic Club building. The architects were Parkinson & Bergstrom and the terra-cotta was executed and furnished by Gladding, McBean & Company, of San Francisco. The central figure is nine feet high.

Paving Brick

The St. Petersburg (Fla.) Ornamental Brick Co. has made arrangements to manufacture paving brick and will eventually turn its production to that commodity.

The Westport Paving Brick Company announces the removal of its offices to the Garrett Building, South and German streets, Baltimore, Md.

Three men, working in shifts so arranged that only two of the men were on the job at a time, laid 58,000 bricks in a Fulton (N. Y.) street, in one day. This, it is claimed, is a record.

In Cherokee and Crawford Counties, Kansas, where there are large deposits of shale and coal in close proximity to each other, companies are being formed for the purpose of starting brick plants near the mines, and so meeting the conditions which have arisen through the shortage of gas in what was known as the "Kansas Gas Belt."

An official call for the International Good Roads Congress, to be held at the Panama-Pacific Exposition in San Francisco, February 22-27, 1915, has been issued by the International Good Roads and Automobile Association and the National Good Roads Association, of which Arthur C. Jackson is president, Maude E. Jones secretary, and Mrs. Edward L. Murfey, treasurer. Headquarters are at the Congress Hotel, Chicago.

The News in Brief

The D'Hanis Brick & Tile Company, of D'Hanis, Tex., has increased its capitalization from $20,000 to $40,000.

The Scull-Norton Company, recently organized at Wilmington, N. C., will make tile and other clay products.

Niagara Falls (Ont.) Brick & Tile Company has made satisfactory arrangements with the township authorities and will begin operation in the Spring.

The Charlotte Brick Company, of Charlotte, N. C., will increase its capacity at Grafton, S. C., from 100,000 to 200,000 daily.

The Mountain District Brick & Tile Company has opened a brick plant near Nanaimo, B. C. The company has valuable shale deposits near East Wellington, B. C.

H. D. Chamberlain and R. H. Somers, formerly of Chamberlain, S. D., are about to start a brick plant at Fort George, B. C.

The Hepworth Sand & Products Company, of Hepworth, Ont., is installing a large sand-lime brick plant at that place.

A sand-lime brick plant is to be built at Comanche, Tex., to utilize the silica sand which has been, up to this time, shipped to Wichita Falls, for the manufacture of glass.

The National Loktile Company has been incorporated at Washington, D. C., with a capitalization of $100,000. The incorporators are Richard B. Owen, 629 F. street, N. W., George B. Wagner and Edwin H. Snyder. It is understood that the company will manufacture fireproofing.

Officials of the New Hope Vitrified Brick Company, of New Hope, Pa., have selected the site for their new plant, and excavating for the foundations has begun. A force of probably 200 men will be employed erecting this new plant, which is expected to be put up in record time.

Between fifteen and twenty cars of building brick a day leave the sidings of the Albion (Ill.) brick plants—the Albion Vitrified Brick Company and the Albion Shale Brick Company. So heavy has the demand been upon the railroads that additional switching crews have been assigned to take care of the movement of these brick.

A $250,000 concern, the New Hope (N. J.) Vitrified Brick Company, has broken ground for three large brick buildings in which to house machinery calculated to produce 150,000 red shale brick per day. An order has been placed for three million brick to be used in the construction of the buildings and it is expected that a full year will elapse before the plant is running. All of the machinery will be operated by electric motors and the brick will be dried by artificial heat and burned with producer gas.

By writing to the Bureau of Foreign and Domestic Commerce, Washington, D. C., and mentioning File No. 11,768, manufacturers of the articles named in the following paragraph may obtain the name of the concern in question:

A foreign firm informs an American consulate that it intends to push the sale of American goods throughout Europe, Asia Minor, Syria, Egypt, and northern Africa. It desires representation on a commission basis of the following: Cheap motor trucks, hardware, plumbers' supplies, well-drilling machinery, pipes and fittings, frogs and switches for tramcars and railroads, wire of all kinds, and tires for automobiles.

It is Adjudged, Ordered and Decreed

that the defendant, ...Co., a corporation, its officers, agents and employees, be and they are hereby perpetually enjoined and restrained from describing belts——made by any other than complainant as Gandy Belt or Gandy Belting——"

This decree in favor of

The Gandy Belt

was recently obtained in the United States District Court of Virginia after a warmly contested litigation.

The GANDY Belt has many imitators, and at times it is necessary to take the matter into court in order to protect our customers and ourselves.

Always look for the red belt with one green edge—that's the GANDY.

Sample on request.

THE GANDY BELTING CO.
732 W. Pratt Street, Baltimore, Md.
New York Office, 88-90 Reade St.

SEGER'S COLLECTED WORKS

A MINE OF KNOWLEDGE

Containing Many Nuggets of Valuable Clayworking Experience

We are receiving many orders for our recently-issued volume of Seger's Collected Works. Every clayworker has had an opportunity at some time or other to read some of the articles from the able pen of Hermann August Seger, and his writings have served as a base for progress in clayworking in every civilized country in the world. Seger's Collected Works, as issued by us, contains a collection of the articles that we think to be of the utmost value to our readers, and you could make no more profitable addition to your library shelves than by securing a copy of this work. It is handsomely bound in silk cloth, stamped in gold, and contains 304 pages of the best technical information. The size of the book is 6x9 in. Place your order at once before the edition is exhausted. Price $3.50, postpaid.

Book Department
"BRICK AND CLAY RECORD"
PLYMOUTH COURT, CHICAGO

The Superior Quality of

"INDUSTRIAL CARS"

is the

result of many years of practical experience and there has been no branch of clay manufacture in which they have not been placed in service.

The investment demanded for the best possible car for your plant requires careful investigation.

The Industrial Car will be your first choice and the one eventually purchased. The manufacture of dryer cars is only a small part of our line. We have a car for every need.

Write for our catalog and let us submit an estimate for the coming season's requirements.

Electric Locomotive & Car Co.

Successors to The Industrial Car Co. and The Cleveland Car Co.

West Park, Ohio

Chase Improved Flexible Bearing Folding Deck Dryer Car

See this car before placing your order.

We also manufacture a full line of Side Dump, Bottom Dump and General Purpose Cars, Transfer Cars, Turntables, Switches, etc.

The Chase Foundry & Mfg. Co., Columbus, O.

With a capacity of 1,600 gallons of pure, soft water every hour, a No. 14 Dodge Eureka Water Softener has been installed at the plant of the American Clay Company, of Macksville, Ind.

Through the incorporation of the Sioux City (Iowa) Brick & Tile Company, a new corporation has been formed to take over the old Sioux City Brick and Tile Works. C. R. Marks of Sioux City is attorney for the new company and has also been elected its secretary.

John Wright, Superintendent, Bureau of Inspection and Accident Prevention, Aetna Life Insurance Co., Hartford, Conn., desires to secure catalogs of clayworking machinery, stating that he often finds catalogs very useful in connection with his inspection work.

At a meeting of the board of directors of the Harbison-Walker Refractories Co., held at Pittsburgh, Pa., a quarterly dividend of one and one-half per cent on the preferred stock was declared, payable October 20. Hamilton Stewart is secretary of this company and the general offices are in the Farmers' Bank Building, Pittsburgh.

Attorney Will R. McDonald, of Wellsville, O., has been appointed by Federal Judge Day, at Cleveland, Ohio, as receiver for the bankrupt Vulcan Clay & Brick Company, in the west end of Wellsville. While it is claimed that the property of the company is valued at $10,000, the indebtedness of the concern totals close to $20,000. Several years ago the property was one of the most active in the upper Ohio valley.

COMPARISONS OF COST OF FUEL.

Roy Cross, secretary of the Kansas City Testing Laboratory, has prepared a comparative statement of the cost of heat in Kansas City. He finds that, based upon the approximate price of fuel in Kansas City, 1,000,000 British thermal units of heat, or the amount necessary to evaporate 125 gallons of water, will require:

80 pounds lump coal at $4 per ton	$ .16
72 pounds anthracite at $10 per ton	.36
53 pounds crude oil at 2½ cents per gallon	.18
48 pounds natural gas at 27 cents per 1,000	.27
48 pounds natural gas at 50 cents per 1,000	.50
60 pounds artificial coal gas at 50 cents per 1,000	.79
150 pounds water gas at 50 cents per 1,000	1.40
292 kilowatt hours of electricity at 5 cents per kwt.	14.60

His comparisons are interesting as showing the relative cost between the different kinds of fuel, but are not quite fair as to oil, for he does not take into consideration the cost of handling oil and handling coal, says "Oil and Gas Journal." Had he figured the cost of handling in making his estimate he would have found the cost of the oil to have been the cheapest of all the fuels tested.

An expert fuel engineer, in a recent paper published in the London (England) "Times," discusses at great length the respective merits of oil and coal as fuels for developing propulsive power in connection with the recent decision of the British Admiralty to change its fuel from coal to oil in its fighting vessels, in which he makes the following strong statement:

"The advantages of oil over coal are so considerable, particularly for marine navigation, that it pays to burn it, even at double the price per ton of steam coal, but the uses to which petroleum is put are so diverse that the proportion consumed as a source of power is extremely small."

Due allowance should be made, also, for the variation in costs of the various fuels at different parts of the country. For instance, the cost of both lump and anthracite coal, in Kansas City, is very different from the cost of either, in Ohio.

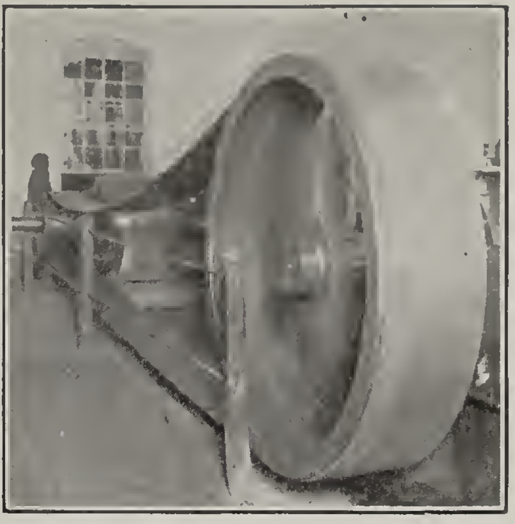
Building Statistics

Some idea of what kind of a building year 1913 has been, as compared to 1912, can be gained from the following figures, which are furnished by the "American Contractor." Based on reports received from 60 widely scattered cities, they offer a basis for comparison that is valuable to clayworkers who are anxious to extend their markets or to "reason why" they are not selling more of their products in certain sections of the country. The tremendous gain of more than $44,000,000 in Dayton, Ohio, has helped, materially, to offset the losses elsewhere, but this is poor pickings for the manufacturer to whom distance makes Dayton a closed market. A careful analysis of the figures will give considerable food for thought and will serve to guide the wise manufacturer as to his policy for 1914.

City	First nine months of 1912	First nine months of 1913	Pct. gain	Pct. loss
Akron	$ 3,657,017	$ 4,287,040	17	..
Atlanta	5,711,137	4,277,699	..	25
Baltimore	5,819,345	7,258,617	25	..
Boston	14,383,066	14,267,455	..	1
Bridgeport	2,716,243	3,287,465	21	..
Buffalo	10,181,000	9,898,000	..	3
Cedar Rapids	1,621,450	2,168,000	34	..
Chicago	66,805,300	67,528,420	8	..
Cincinnati	7,290,251	6,917,352	..	5
Cleveland	12,515,576	18,548,665	48	..
Columbus	3,927,860	4,087,075	4	..
Dallas	4,127,640	6,941,580	68	..
Dayton	2,791,193	46,900,009	1584	..
Denver	3,648,835	2,339,145	..	36
Des Moines	1,292,928	1,800,004	39	..
Detroit	19,980,380	23,601,775	18	..
Duluth	1,822,259	3,527,034	94	..
Evansville	1,075,664	1,556,541	45	..
Ft. Wayne	2,193,750	1,787,712	..	18
Grand Rapids	1,873,679	3,485,148	86	..
Hartford	6,275,095	4,039,846	..	36
Indianapolis	7,165,772	7,707,745	8	..
Kansas City	8,987,978	7,630,090	..	15
Lincoln	860,585	1,395,355	62	..
Los Angeles	23,821,812	26,583,262	12	..
Louisville	5,627,210	3,398,870	..	40
Manchester	2,041,931	1,259,868	..	37
Memphis	3,425,761	5,448,394	59	..
Milwaukee	11,813,218	10,054,583	..	15
New York—	161,488,326	108,782,441	..	33
Minneapolis	9,441,120	9,647,350	2	..
Nashville	939,948	1,462,581	56	..
Newark	8,978,519	11,907,252	33	..
New Haven	3,813,388	2,960,571	..	22
New Orleans	2,987,603	3,536,662	18	..
Oakland	6,874,685	6,814,956	..	..
Omaha	3,829,146	3,398,640	..	11
Paterson	1,637,426	1,078,356	..	34
Philadelphia	29,050,640	32,668,000	12	..
Pittsburgh	9,129,915	12,492,596	37	..
Rochester	9,602,240	7,531,961	..	22
St. Joseph	849,559	660,375	..	22
St. Paul	5,875,795	7,284,103	24	..
St. Louis	16,533,882	12,676,163	..	23
S. Lake City	2,843,162	1,572,390	..	45
S. Francisco	18,614,345	16,819,659	..	9
Scranton	1,045,020	950,485	..	10
Seattle	6,669,620	7,909,400	19	..
Shreveport	1,200,870	1,063,786	..	11
Sioux City	1,881,902	1,496,863	..	20
South Bend	719,073	765,164	6	..
Spokane	1,874,692	3,146,660	68	..
Springfield	1,040,962	605,394	..	42
Syracuse	3,269,343	4,703,558	44	..
Tacoma	1,316,790	2,158,583	64	..
Toledo	4,504,495	4,635,261	3	..
Topeka	780,892	724,149	..	7
Washington	19,680,260	7,694,779	..	61
Wilkes-Barre	1,887,713	1,450,203	..	23
Worcester	4,855,170	3,767,926	..	22
Total	$586,670,736	$583,349,016	0	1

"I Don't Care"

We advocate Cling-Surface treatment and *guarantee* best results obtainable. Still, after explaining the benefits derivable from slack belts from A to Z, and offering to take no money whatever for Cling-Surface if it doesn't do all we say, many men say, *"I don't care. My belts give me a lot of trouble, that's true, but I haven't time to think of them."*



The Man Who Does Care Uses Cling-Surface and it Pays Him Well!

Many belt operatives express this sentiment when we show them their belts are improperly managed.

Put Cling-Surface on just one tight belt for a trial. Select one that has been slipping badly, running off or wearing rapidly, and you will find Cling-Surface highly beneficial. Ask us for examples from Brick plants where Cling-Surface has demonstrated itself to be indispensable.

Cling-Surface Company
1029 Naigara St Buffalo N Y
New York Boston Chicago Denver Atlanta Memphis Etc
69

The Best Reason

for adopting the **Martinsburg Brick Wagon** is the saving in time of delivery.

TIME IS MONEY

You can haul 1/3 more with the same team and are not delayed 20 to 30 minutes each time while unloading. This alone merits your careful investigation.

In addition your material is delivered in better condition (it won't break or chip in unloading) and you don't require expert help to get results. Ask us for list of users and get their experience.

Auburn Wagon Co.
450 Race St. Martinsburg, W. Va.

"Pioneer Machinery is simply the best,
And used in clay Products, it stands Every test;
Durable, high-class, efficient and true,
It does for its users what others Can't Do

PIONEER-MANUF'R'S-CLAY MACHINERY
TRADE
T.R.C.Co.
MARK
ESTABLISHED-1862.
TAPLIN-RICE-CLERKIN Co.
AKRON-OHIO-U.S.A.

REFERENCES:
Wm. E. Dee Clay Mfg. Co., Mecca, Ind.
National Drain Tile Co., Terre Haute, Ind.
Whitehall Sewer Pipe Co., White Hall, Ill.
Lehigh Clay Product Co., Lehigh, Iowa.
The Denny-Renton Co., Seattle, Wash.
The Gladding-McBean Co., San Francisco, Cal.
The Pacific Clay Products Co., Los Angeles, Cal.
W. S. Dickey Clay Mfg. Co., Kansas City, Mo.
Texarkana Pipe Co., Texarkana, Tex.
San Antonio S. P. Co., San Antonio, Tex.
Henry Stevens Sons & Co., Macon, Ga.
Pomona Terra Cotta Co., Pomona, N. C.
Shawmut Clay Co., Shawmut, Pa.
Robinson Graves S. P. Co., Uhrichsville, O.
Dominion Sewer Pipe Co., Swansea, Ont., Can.
The Hamilton & Toronto Sewer Pipe Co., Toronto, Can.
British Columbia Clay Products Co., Vancouver, B. C.

Send for Catalog No. 29

The-Taplin-Rice-Clerkin-Co.

The Clay Machinery Folks of the United States and Akron, O.

Recent Incorporations

The Auburn (Iowa) Brick & Tile Company has filed articles of incorporation, with an authorized capital stock of $1,000,000. The officers are: President, W. A. Straight, of Auburn; vice-president, Lee S. Straight, of Fonda, and secretary and treasurer, Guy H. Straight, of Fonda.

Indiana Clay Company, Indianapolis, Ind. Capital $20,000. W. E. McKee, C. W. Stephenson and C. B. Crets, incorporators.

Hillsboro Brick Company, Mango, Fla. Incorporated with a capital of $50,000.

Comanche Brick Company, Comanche, Tex. Capital $15,000. Incorporators, H. Burks, D. H. Cunningham, Jr., and J. C. Henderson, all of Comanche.

The Keystone Clay Co. is the name of a new concern which is being formed at Wilkesbarre, Pa., by Arthur E. Royer, John J. Ruckne, H. B. Hamlin and W. T. Hutchins. An application for a Pennsylvania charter has been granted, the capital named being $5,000.

William W. and Walker W. Winslow and R. H. Morrish have incorporated the Indiana Paving Brick & Block Co., of Indianapolis, Ind., with a capital stock of $30,000.

Dr. J. W. Brown, J. L. Morrison and D. W. Bailey have incorporated the Brown Brick Company, to operate at Singer, La. The company is capitalized at $25,000.

C. J. Ollman, J. J. Kurtz, S. S. Rozelle and C. A. Heintzelman, of Kanopolis, Kas., and John Yantz, of Louisville, have incorporated the Kanopolis Clay Products Co., with a capitalization of $20,000.

John W. Candler, Charles B. Neker, G. W. Haskins, A. G. Reker and N. B. Haskins, of Cleveland, Ohio, have organized the Brooklyn Brick Co., with a capitalization of $25,000.

H. C. Lightner, John C. Maher and John J. Ryan, all of Springfield, Ill., have incorporated under the name of the Illinois Brick & Stone Co., with a capitalization of $5,000.

A certificate of incorporation has been filed by the Olean Tile Co., of Olean, New York, placing the capital at $20,000. The directors are Ormel W. Pierce, Charles T. Fuller and Gordon D. Phillips.

L. W. Thorne, C. F. Rush, John C. Stier and Levi Thorne have incorporated the Whitewater (Wis.) Brick & Tile Company, with a capital of $30,000.

With a capitalization of $50,000, the National Terra Cotta Company of Kansas City, Mo., has filed papers of incorporation. The incorporators are Harry Stiver, A. F. Brocker and E. M. Brocker.

Firetuff Manufacturing Company, Huntington, Ind., to manufacture fireproofing material; capital stock, $150,000. Directors: Ralph Runyon, P. C. Plastires, Paul M. Taylor, J. W. Caswell and Charles M. Lucas.

Chatsworth Brick & Terra Cotta Company, New York, N. Y. Capital, $100,000. Incorporators: Herman Oliver, Francis J. Nugee and William A. Walling, all of 26 Cortland St., New York City.

A stock company, composed of James E. Conley and Charles White, of Terre Haute, Ind.; Frank Roberts, of Brazil, Ind.; Henry Weber, J. W. Danhour and Irwin Smith, of Clay City, Ind., have purchased the Lafety Brick & Tile factory and will operate it under the name of the Clay City (Ind.) Clay Company. The company is incorporated for $18,000. It will make numerous improvements on the old plant.

The incorporators of the Barr Brick & Tile Company, Mazeppa, Minn., are: A. J. Hodge, Mazeppa; A. L. McCray, Mazeppa; Peter Englehart, Mazeppa; Theodore Maas, Mazeppa; N. M. Olson, Mazeppa; James J. Darcy, Mazeppa; B. W. Disney, Zumbrota Falls, Wabasha county, Minn. The capital is $25,000; indebtedness limit, $25,000; period of duration, three years, but a majority of the stockholders may end it at the close of a year by a majority vote of the stock.

Legal Decisions

Validity of City Ordinance Forbidding Construction of Brick Kilns.—The Supreme Court of Nebraska says that the case of State on the relation of Krittenbrink vs. Withnell, 135 Northwestern Reporter, 376, was for a writ of mandamus to compel the defendant as building inspector of Omaha to issue to the relator a permit to construct a brick kiln on a tract of land owned by him in that city. The defendant had refused to issue the permit because he could not do so without violating an ordinance declaring: "It shall be unlawful for any person, persons, firm or corporation to erect or construct within the city of Omaha any kiln or oven to be used in the manufacture of brick." The trial court held in harmony with the views of the relator that the ordinance was arbitrary, unreasonable, and void, as being an invasion of personal rights and of private property, and allowed the writ. But the supreme court reverses the judgment of the trial court, holding that, in its view of the law and the facts, the relator had not made a case entitling him to the writ.

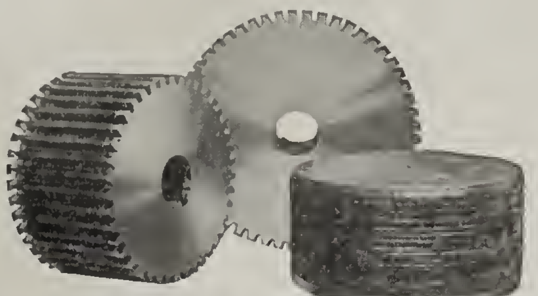
The supreme court says that, to establish the invalidity of the ordinance, the relator adduced proof tending to show that he was the owner of 6½ acres of land situated in the outskirts of Omaha, in the immediate neighborhood of a dairy and a pasture, remote from the densely populated portions of the city, and that he planned to construct and operate on the premises described a modern kiln, different from that formerly used in the manufacture of brick. According to his summary of the proofs relating to the new method, the brick kiln "is no wise harmful to health or vegetation, produces little or no smoke, no deleterious gases, no obnoxious odors, and is not a rendezvous for vagrants and tramps." He argued that the contemplated enterprise at the place described would not be a nuisance per se, or in and of itself, and that the city had no authority to interdict it as such.

Had the city power to pass and enforce the ordinance? The passing of an ordinance forbidding the construction of brick kilns in a city may be a valid exercise of police power. By charter the state legislature delegated to the city power "to make and enforce all police regulations for the good government, general welfare, health, safety and security of the city and the citizens thereof," and "to prescribe fire limits and regulate the erection of all buildings and other structures within the corporate limits," and "to define, regulate, suppress and prevent nuisances." Under the authority thus conferred, the city council, in passing the ordinance, obviously intended to exercise the police power of the city, and the courts should not interfere with its enforcement unless its unreasonableness, or the want of a necessity for such a measure, is shown by satisfactory evidence.

It will be presumed that the city council in passing the ordinance acted with full knowledge of the conditions relating to the subject of brick kilns located within the city limits. The reasons of public policy which prompted the city lawmakers to pass the ordinance may not appear on the face of the legislation, or in the relator's petition, or in the evidence adduced at the trial of this case. The inquiry, therefore, is not necessarily limited to the city's authority to prevent or abate nuisances, but extends to every phase of police power delegated in any form to the municipality.

Smoke Ordinance Held Valid.

The relator's land in Omaha is held subject to proper



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rules regulating the common good and the general welfare of the people of that city. He had not yet constructed his kiln, and the testimony adduced to show that it would not become a nuisance was based largely on observations of existing kilns operated according to the modern method described in his plans and evidence. According to the proofs, the volume and character of the smoke would be less objectionable under the new process, but the stack would emit smoke of a light color continually. The fair inference from all the evidence was that black smoke in great volume would escape at intervals under ordinary management of the plant. It was undisputed that clay, excavated on the premises, and coal, ashes and brick, in vast quantities, would be handled there. Teams and men would be required for that purpose. The fact that the wind in this climate would carry dust and soot long distances at times, could not be disproved. On one side of the kiln site an addition to the city was rapidly being occupied by valuable residences, and there was no factory in the immediate neighborhood. The proofs showed that there were 13 houses within two blocks of relator's land and a witness for the defendant testified that within five blocks there were 20 or 25 families. Smoke alone may amount to a nuisance, where it materially interferes with the comfort of human existence in the house and grounds of the owner, though they are located near the edge of a city no great distance from smoke-producing factories. An ordinance "prohibiting the emission of dense smoke within the corporate limits of the city" has been held valid as a proper exercise of police power.

Brick Kilns Under Police Jurisdiction.

While a city having authority "to define, regulate, suppress and prevent nuisances" cannot arbitrarily use it to prohibit harmless and inoffensive private enterprises, the acts of the city council in exercising such police power may be held conclusive, if the subject of municipal legislation might or might not be a nuisance, depending upon conditions and circumstances. Brick kilns are frequently condemned as nuisances, and are proper subjects of police regulation.

In the present case, it seemed to be conceded that a brick kiln is an inviting place for tramps in cold weather. While the relator expressed the conviction that he could keep them away, there was nothing to indicate they would not be turned loose on the residents of the neighborhood in the outskirts of the city, where police protection might be inadequate. Near valuable residences relator intended to build a smokestack 130 feet high, and to remove clay to a depth not disclosed by his plans or evidence. The value of residence property in the neighborhood might be damaged by the relator's enterprise. These were proper matters for the consideration of the city lawmakers. When the entire record was considered, the evidence did not justify a finding that the ordinance in question had no relation to the public health, safety, or welfare, or that it was not a bona fide exercise of police power, or that it amounted to an unconstitutional invasion of the relator's individual rights, or that it was arbitrary and unreasonable.

NEW PLANT AT PORT ANGELES, ORE.

A new brick plant has been started at Port Angeles, Oregon, J. Krumle being the owner and proprietor. The first kilns will be opened in a few weeks and it is expected that this concern will turn out a high grade pressed brick.

Machine and Hand Brick Moulds
of Every Description

Write for Detailed Description and Prices
The G. B. Mentz Co.
America's Foremost Mould Makers
Wallkill, N. Y.

Freight Tariffs

Clayworkers face three propositions in connection with the shipment of their material to near or distant markets. First—overcharges on freight, due to erroneous billing, and the necessity of presenting claims for adjustment; second—the equity of the rate itself; third—the method of procedure by which they secure prompt settlement of their claims or an adjustment of the unfair rate.

In the matter of claim settlements, where the amount charged is clearly in error, if an invoice be rendered against the carrier, to which is attached the original receipt or original bill of lading, and, if the question of weight be involved, a proper certificate of the weight, there need be no difficulty in securing a return of the amount overpaid, within a reasonable time. The invoice should be treated as a bill for material sold, and carried as a current account, statements being rendered monthly upon it, in the same manner as statements are rendered to the customer to whom the goods were shipped. The same process of collection—dunning letters—should be followed, until the claim is paid or the carrier states that the claim will not be allowed. Then it is a matter for the same sort of procedure as would follow if a customer stated he would not pay a bill for goods shipped him, because the goods were not as represented.

If, however, the claim be based upon a rate that seems erroneous, it may be that the carrier is not in a position to adjust the claim, owing to some misunderstanding of the date upon which it became legally effective, or some other technicality. *Remember, any claim that the railroad allows illegally, may be construed as a rebate by the Interstate Commerce Commission and subject not only the carrier, but the shipper, to a fine.* Delays in settlement on claims of this character are, as a rule, due to the desire of the carrier to be well within the law, rather than to hold up the payment of what is, at most, a comparatively small amount.

In any event, it will save time and trouble to submit all proofs of claim with the bill that is charged against the carrier. If a rate be in question, quote the authority you have for that rate. The law requires that rates should be published for a certain length of time before they become effective. This is done for the shipper's protection and is a blow at one of the old forms of rebate—when a favored shipper was able to quote a lower price on certain deliveries, through being advised privately that before shipment would be required, a lower rate would be in effect. These published tariffs are on file at convenient points and it will pay to study them before making a claim, so that you will not put yourself in the position of claiming something that is not really due you, or asking for a ruling that it would be illegal to grant.

When, however, you have made a claim, stick to it until you have a settlement, or a formal refusal on the part of the railroad company; the latter should be, and generally is, accompanied by a reason. If, having received this, you still believe the claim just, it is well to submit it to some one who makes a business of prosecuting these claims before the Interstate Commerce Commission. And while it may be but a small claim, *remember that more is involved than the face of the claim.* A principle is at stake—whether or not you have been overcharged, and whether or not you will be overcharged in the future, is the question that takes precedence

Clay Workers!

There never was a time in the history of the clay industry when correct methods in designing and equipping your plants was of so much importance.

Right Now

Your assurance of success lies more in lowering the cost of production than in forcing a higher price on the public.

Remember This

The competition of other materials you are facing is due to better and more up-to-date methods of their production.

Seeco Systems Secure Success

We are a corporation, composed of experienced engineers, qualified to handle any problem in the clay industry.

We analyze, design, equip, construct, set in operation and organize your working force along lines to bring cost down and quality up, in old plants as well as new.

Watch This Space for Other Announcements

The Schaffer Engineering & Equipment Co.
(Incorporated)
Tiffin, Ohio

over the immediate monetary return on the claim you have made.

The whole thing may cost more than the amount of your bill, but a victory on the first claim may give you a rate that will help you to secure a vast volume of business in the very near future.

The Interstate Commerce Commission in a decision rendered Oct. 23, denied the Rock Island railroad the right to increase rates on brick from points in the Kansas gas belt district, to Chicago and stations in Iowa along that line; it further ordered a continuation of the present rates for a period of two years from Dec. 1, 1913. It was proposed to raise the rates from 10c to 12½ per cwt. on all brick, except bath and enamel.

On October 15, all of the lines in that territory located on and North of the Potomac and Ohio Rivers and on and East of the Mississippi River, including New England, filed tariffs with the Interstate Commerce Commission, effective November 15, 1913 advancing rates on all classes and commodities uniformly five per cent.

The only freight rate change which has gone into effect since our last issue, and which was not previously published in this column is:

From Boulder, Cheyenne and Laramie, Wyo., and Denver, Colo., Brick, to Battle Mountain, Nev., 43c per cwt.; to Golconda, Nev., 43½c per cwt.; to Hazen and Imlay, Nev., 51c per cwt.; to Ladoga, Nev., 43c per cwt.; to Lovelock, Mill City, Parran and Rye Patch, Nev., 51c per cwt.; to Wabuska, Nev., 58c per cwt.; to Winnemucca, Nev., 43½c per cwt.

MAKES A NEW USE OF BRICK SCRAP.

New York and Long Branch Railroad Tests Material for Ballast on Line in New Jersey.

The Maintenance of Way Department of the New York and Long Branch Railroad, which is used jointly by the Pennsylvania and the Central Railroad of New Jersey between New York and the Atlantic Coast summer resorts, is making an experiment in the use of waste brick from the Raritan brick and terra cotta plants in railroad track ballast. About a mile of spur track on the main line between Matawan and South Amboy is being laid with discarded bats and engineers are showing considerable interest in the result of the experiment.

Peculiar conditions govern the entire stretch of the Long Branch railroad. Very high speed trains operate over this road in summer on a very close schedule, averaging not more than half an hour apart for the day and frequently on a fifteen minute headway during the rush commuting hours in summer. In winter, however, the traffic is very light, except for freight.

Most of the road passes through towns at grade from Elizabethport to Point Pleasant. The character of the soil is clay and sand. When this is not kept damp the dust nuisance is very great and despite the fact that the roadbed is now laid in trap rock ballast there is considerable discomfiture felt by patrons of these roads during protracted dry spells.

Great banks of discarded brick line the railroad from Maurer to Red Bank, more than half the distance to the shore. An engineer conceived the idea that this material might be utilized for ballast if it proved susceptible of tamping. In view of the fact that these bat piles represented pure waste he figured that it would be a cheaper ballast than stone because it would not require crushing and haulage cost would be much less than that for crushed stone.

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Trade Review

New York.

The building situation in New York and vicinity was made brighter this week by the announcement that the steel company had no intention of closing down any of its capacity, beyond that absolutely necessary for repairs. The steel tonnage reported for the latter part of October was sufficient to keep the mills going and this has had a direct stimulus on the demand for brick. Prices have held firmly and the expected advance on November 1st will not take place. Further postponement was deemed advisable because architects, encouraged by the low price of structural material are slowly coming into the market on inquiries.

There has been a better call for face-brick. It was said that enough orders for face-brick are pending to take care of a very satisfactory proportion of the supply in the metropolitan district alone, but prices still run between $22 and $26, levels which have been maintained for some time.

Hollow tile fireproofing material is the most active element in the building material market. A report from the big plants in Middlesex county, which supply a large part of this kind of material to the New York and East Jersey markets, shows that suburban building and skyscraper construction in this city and suburbs is taking tile at a rate which, in view of the scarcity of labor at the kilns, prevents the companies piling stacks. The architectural terra-cotta companies of the East are also fairly busy.

A report is current that the building code upon which most of the New York builders have been setting their hopes, will not be reported, especially if Alderman Herbst, chairman of the committee, wins the higher office to which he aspires in the forthcoming election. In that event the revision of the building code will have to be entirely gone over for the fourth time. If this be the case, one disturbing element in the Eastern building material market will be removed temporarily and prospective builders will feel freer to go ahead with their plans when the financial situation clears. Indirectly this affects the East Jersey building movement. If lumber should be barred in New York construction, as the Herbst code provides, it will bring about a larger amount of frame construction in New Jersey because of the unloading policy many lumber interests would follow. Here in New York it would open the way for a more extended use of burned clay building products and reinforced concrete.

The brick manufacturers up the Hudson river are shipping into this market very lightly. East Jersey has been taking very little Hudson brick of late because building construction has been so light, but there has been a better inquiry from Newark, Jersey City and Elizabeth dealers and the fact that the New Jersey Brick Company of Matawan, took the big Equitable contract involving approximately 17,500,000 common and hollow brick, practically means that one concern which has been supplying the New York and East Jersey markets will have all its attention concentrated upon the filling of this one large order.

Prices have not changed in any department. Sewer pipe is still stiff but there has been no price fluctuations.

Louisville, Ky.

General trade conditions in Louisville and vicinity have been very fair for the past few weeks, in spite of the fact that the weather has been unfavorable. During the past two weeks hardly a day has gone by without more or less rain. This has necessarily cut down construction work and stopped the progress on excavations. Large contracts have been scarce, especially for the finer grades of brick, as well as tile and fireproofing materials. A large number of small contracts, involving from one to ten thousand of the cheaper grades, have been pouring in steadily, and the small brick makers can hardly produce brick fast enough to supply the demand.

The Louisville Fire Brick Company has reported the final shipment of brick to the J. J. Gray Iron Company, of Rockdale, Tenn., for use in the latter's blast furnaces.

George H. Fielder, of the Coral Ridge Clay Products Company, who has been in Atlanta, Ga., for the past two weeks, passed through Louisville on his way to Chicago. Mr. Fielder is taking a much-needed vacation.

A. P. McDonald, general salesman for the P. Bannon Sewer

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They combine perfection of construction, beauty of tone, durability and economy of cost. : : : : :

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W. W. KIMBALL COMPANY
Established 1857
S. W. Cor. Wabash Ave. and Jackson Boul.
CHICAGO

Kimball Player Piano
Perfect as a Piano—Perfect as a Player

Pipe Company, has returned from a week's trip through Eastern Kentucky and the Bluegrass district. Mr. McDonald said that the sewer pipe business is fair, though it is not quite as good as it was a month or so ago. He is very well satisfied with general conditions, and has no complaints to make. Sewer contracts have been plentiful enough this Fall. The company makes pipe in sizes from three to thirty-six inches, and while these sizes are not large enough for many of the main lines, they are in strong demand for sewer connections.

The Kentucky Vitrified Brick Company has found conditions poor in Louisville during the past few weeks for the sale of hollow tile and fireproofing. Building permits in Louisville for 1913 are far behind those of 1912, only one really large building being built this year which was not contracted for in 1912. This state of affairs cut down the tile business locally. However, a good many of the smaller modern residences are being built with hollow-tile partitions, and as this business is a coming one, the future looks bright, even though there be a slump in office building construction. This concern does not make vitrified facing brick, and has not been pushing the Bannon paving block for a long time, although it is still made in limited quantities. The company has an engineer at work on a new catalogue, which will give a complete description of fireproofing materials and the correct way for laying them. This is in line with an article published in a recent issue of "Brick and Clay Record" wherein the need of literature of this kind was mentioned.

P. M. Crane, of the East End Brick Company, said that the last few months' business has been so heavy as to almost swamp them. The company has completed shipments on two good contracts, one at Shelbyville and the other at Eminence, Ky., and has started delivery of a half million brick for a new school house at Twenty-eighth and Date streets, Louisville, and 450,000 for Parr's Rest, an institution for the care of dependent old ladies.

Kansas City, Mo.

The brick situation in Kansas City, while fairly satisfactory, is suffering from the onslaught of Winter. A slump has taken place during the past couple of weeks, due largely to the wintery weather which has been served. Most of the Kansas City common brick plants will continue to operate for several months, according to present intentions, the stocks on hand being generally light, and hardly large enough to care for the current demand.

Sixth street, between Broadway and Bluff street, Kansas City, is to be turned over to the various advocates of paving material as a sort of experiment ground. The Western Paving Brick Manufacturers' Association is to be given a certain stretch of the street and will pave it with brick for the purpose of demonstrating the superior qualities of this material. Another section of the thoroughfare will be paved with creosote wood blocks, another with stone blocks and so on down the line. The work will be begun in the near future and it is planned to put the street into commission about the first of the year. All parts will be opened to traffic simultaneously, according to present plans, and the test will be a convincing one. Secretary Thurston, of the paving brick association, has been working on this phase of the business for some time, and is confident that the test of brick will result in conclusive proof of its merit as compared to other materials now in the market.

Rapid progress is being made on the plant of the new Vale Brick Company, near Kansas City, the grading for the Rock Island extension to the plant having been completed. The railroad will immediately begin the work of laying the rails, affording direct communication by rail to the new plant. About 1,700 feet of road is to be laid. All of the machinery for the plant has been ordered by president George C. Stephens, while the lumber is already on the ground. A big crew of workmen has been taken on and the construction work is to be pushed as rapidly as weather conditions will permit. The company has forty-six acres of clay available. The first brick will be made the latter part of February, the initial capacity being 60,000. This will be increased to 100,000 common brick daily.

The Bryant Supply Company has secured the contract for the brick for the new roundhouse to be erected by the Terminal railroad. The company will provide about 350,000 common brick for the work, which will begin immediately.

The Roll Brick Company, jobbers of brick made in the Kansas gas belt, will be known in the future as the Roll Lime & Cement Company. The two businesses have been consolidated, with the central yard at Twentieth and Walnut streets. That at Nineteenth and Oak has been abandoned. Charles Roll will continue to have charge of the brick end of the business, and Edward L. will devote his attention to lime and cement.

Elliott & Godfrey, operating a small plant with a daily capacity of 20,000, will operate through the Winter, if possible. Improvements will be made next Spring, with the idea of increasing the capacity.

Garages Built of Burned Clay

An Article is in Preparation Giving Examples of Small Garages Built of Hollow Tile and Brick. If You know of any Good Examples Send Photographs and Plans to

Brick & Clay Record
Chicago, Illinois

IN THIS NUMBER—HOLLOW BLOCK FOR EXTERNAL WALLS

BY THE

BRICK and CLAY RECORD

JOHN H. CAVENDER

SECTY. REFRACTORIES MANUFACTURERS ASSN.

Classified Ads Pages 1096-1098

CHICAGO, NOVEMBER 18, 1913

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Brick
Established 1894

Clay Record
Established 1891

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The Editor's Corner

A Department Wherein is Set Apart Comment and Opinions on Some of the Graver Problems Confronting the Clayworker and Co-Laborers

WHEN a kiln turns out a poor burn the plant owner is disposed to blame the head burner. When the column of clay that streams from the brick machine gives forth a bad product the proprietor is apt to criticise the pugger. The same is true in every department of the plant—the employer talks inefficiency among his employes and overlooks the very fountain head of all troubles—HIMSELF.

Any business—ALL business, must have a HEAD. There must be a GUIDING hand—a CONTROLLING influence, that watches the little things as well as the big things and industrial success is measured only by the extent of this influence.

The hidden leak—the guerilla of the clay plant, increases cost, diminishes profits and endangers prosperity and success.

This leak has not its source AMONG the employes. Its fountain head is in the "MAIN office" where the guiding hand is to be found—the influence that CONTROLS every employe and every subordinate.

Some years ago there was a manufacturer in a Wisconsin city. The owner, moved by a desire to get into the band wagon of modern achievements, undertook to put into practice certain socialistic industrial doctrines which he had obtained from the leaves of a little pamphlet.

His teacher had told him that man was an independent creature. "Treat him as if he was a human being," his monitor advised, "and you will get greater efficiency."

This was GOOD advice—there is no gainsaying that. But the trouble was that the purveyor of wisdom failed to give explicit and detailed instructions.

The pupil—the Wisconsin clayworker, seizing the idea as a good one, put the advice into practice. He told each one of his employers that he was a single unit—that he was to work independent of his fellow men and that he would be judged solely by his own works.

This sounded good and it IS good—to an extent. When it comes to a certain point, however, it ceases to be good doctrine.

This great republic was founded on INDEPENDENCE. Its builders recognized the cardinal principle of INDEPENDENCE and so formed this Government that each man under its benign influence felt that he was a free-born, INDEPENDENT citizen.

Still, our forefathers—these builders of a great nation, saw the wisdom of placing an EXECUTIVE over the heads of each of these several units, because they knew that chaos would result if there was not SOME sort of guiding influence—SOME sort of directing power, that would keep all these several units TOGETHER in a close bond—into one great unit, and thus present a unified influence for productivity.

Our Wisconsin friend—good natured and full of the milk of human kindness, but possessing a mistaken idea as to his duty to himself and to his men, smiled on his men and gave them all the freedom they craved.

Season after season he permitted them further liberty as to the length of a working day—as to the quantity of output.

It was not long before dissatisfaction crept into the little empire without a king. There was no definite purpose in view—every man was working independently of his fellow workmen.

Gradually the best men sought other employment. Soon only the incompetents were left. Quality diminished. Quantity was lowered. Profits ceased.

One day the owner took an inventory and decided that inasmuch as his business was UNPROFITABLE and the MARKET WAS POOR, he had best shut down.

He blamed his men. They were ungrateful. They failed to respond to his generous treatment.

And in all his moody reflections he failed to see that the trouble was NOT in his MEN but in HIMSELF.

The owner had a son—a youth scarcely out of his teens. This young man had spent most of his spare time from school in the yard. He had a pretty fair knowledge of the clayworking game. He had also some ideas as to how a plant should be run.

One day, having completed his college course, this son asked his father to turn over the plant to him, since his parent was disposed to shut it down. The father did so.

The son gathered most of the old men together. He broke in farmer boys for the remaining jobs.

Then he called a council.

"I am going to re-open this plant," he told his men. "I believe in co-operation. I believe in treating every man as if he was a sovereign. It is well to talk of free rein and all that but no body of men can work together to accomplish any particular aim without some sort of guiding hand.

"I expect to be the guiding hand at this plant. I am going to work WITH you and FOR you. I want you to do the same thing with me. I expect to be on the job EVERY minute. If you follow me and make mistakes I will take the blame."

They went to work. From the start they felt there was SOMEONE behind them. From the beginning they knew they had some DEFINITE purpose in view.

There was no INDIFFERENCE. Each man had a certain duty to perform in a certain way and he knew if he did not do it he would be placed in the discard with the other incompetents.

The first year showed an actual profit of $2,500—not a great sum, but large for the investment, and certainly a contrast with the balance sheet of the previous year.

This illustration is drawn from a case in actual life and it proves that many clay plant failures are due to inefficiency—not among the employes, but in the EMPLOYER himself.

Inefficiency in management means a failure to grasp the problem as a whole—a neglect to assign to each factor in the solution—each department of the plant—each process—each job, its proper place and importance in the general program.

We make the mistake too often of looking forward to the delivery end—the selling, haunting the departments that control these factors, without paying any attention to the preliminary planning.

First, place YOURSELF on a FIRM foundation and, being sure you are RIGHT, then go ahead—carrying each individual employe along WITH you. If HE fails rest assured it is because YOU are at fault.

* * *

"WHAT can I do to increase efficiency among my men?" a subscriber writes. Put in a first-class bookkeeper, establish a cost accounting system and make each man under your employ understand that a strict adherence to the daily reports is just as necessary as any of his other duties, is our answer.

Getting efficiency out of men is no different from getting it out of a machine—the word implies the same in both cases.

Efficiency in a machine means getting the FULL ratio of energy FROM it that you have PUT INTO it.

Efficiency in a man means getting his utmost degree of PRODUCTIVITY without OVERTAXING him.

To arrive at both turn to your bookkeeper. Let him work out the cost of labor and the other items of manufacture for each piece made in your plant—for each pound, for each ton. This done you can arrive at a DEFINITE idea as to the UNIT figure which permits a SATISFACTORY profit.

Then go to your superintendent and tell him what this UNIT figure is. Give him a chart or a sheet with the figures plainly worked out.

"Here is what it costs us today to make our products," you say to him. "Take this and study it and if, at the end of the coming month you have made it possible to manufacture the same quality or a better quality of product at a LESS figure we will give you a percentage of the amount saved."

Determine what this percentage is to be and be sure to make it LIBERAL, for you can afford to be generous as by that generosity you add a greater profit for yourself.

If, at the end of the month your superintendent has not kept his manufacturing costs down to the figure of the month previous he is lacking in efficiency because he has failed to secure a full ratio of efficiency from his men and machines, and you are to treat him accordingly.

If you were running a cigar stand and the girl that looked after the sales for you failed to show a certain percentage of profit at the end of each week or month it would not take you long to make a change in your selling force.

The same should be true in your CLAY PLANT.

Employ capable men and demand that they do business with you in a BUSINESS-LIKE way. The cost chart is a business barometer and tells you when your superintendent is making a profit for you.

WE promised you that this issue of "Brick and Clay Record" would be an unusually interesting one and we believe that you who read the number will agree that we have kept our promise. The article on "Efflorescence" by Prof. Charles F. Binns, alone is worth hundreds of dollars to the owner of a clay plant who is troubled with scum on his brick.

The other features are equally as valuable and we take especial pride in the departments. The "Questions and Answers" is a goldmine of information as is the "The Superintendent."

Taking the magazine as a whole, when we had completed it, we felt we had reached the very height of quality but it has been said that "We never do anything so well but what we can do it a little better," and we are disposed to feel that this is going to be true in the next issue of the magazine which will be off the press December 2.

For instance, we have a very interesting article by Prof. R. T. Stull on "How Enameled Brick are Made." Professor Stull is head of the ceramics school at the Illinois State University and his paper is one that was read before the American Ceramic Society. He is looked upon as an authority on the subject he treats and because of the recently manifested interest in this branch of the clay product industry we believe what he has to say is going to be read eagerly.

There are only about half a dozen enameled brick plants in the country, which proves that this is a department of manufacture that has been neglected.

"Your Drier—How to Make it Efficient," by H. C. Russell, is another practical article on a subject that appeals to all clayworkers. Mr. Russell gives you some real information in his article and we advise you to be sure to read your next copy of the magazine.

Among the other features will be a special one by Irwin C. Walker on "The Little Red Brick School—Its Modern Prototype," "American Pottery—Its Development," by Warfield Webb, "Running Expenses and How to Charge Them," by John Grayar; "A Simple Rope Haulage for Clay Plants," by W. A. Hull; "How to Burn Clay Products Economically with Producer Gas," by E. Schmatolla, and several other features equally as interesting.

The editor personally advises every subscriber to read the next issue of "Brick and Clay Record" from cover to cover, not even omitting a single article, for it is going to be one of the best issues we ever have published.

In the Dec. 2 Issue:

Your Dryer—How to Make It Efficient. By H. C. Russell

This One Single Feature in the next number of "Brick and Clay Record" is worth a Hundred Dollars to any clay worker. It is only one, however, of several equally as valable features. Do not forget to open your next magazine.

Elbert Hubbard Says: "The Man Who Seeks Usually is a Receiver"

FRA ELBERTUS, THE ROYCROFTER FROM EAST AURORA, PHILOSOPHIZES FOR THE BENEFIT OF "BRICK AND CLAY RECORD" READERS .·. .·. .·.

"THE man who asks gets to know," says Mr. Hubbard. "The man, who when told, takes notice, grows. The man who works wins." Could there be anything more to the point than these three sentences? They may be received by ANY man clayworker, cobbler or candy-maker, and taken unto himself for reflection. The clayworker who does not WANT to succeed, will never SEEK, and he who does not SEEK will not find.

WE live in an age of investigation and interrogation, hence the success of the man who furnishes the truth and those who absorb it.

We are beginning to see into and through things and it's a case "if you don't see what you want, ask for it"—that's right. If you get more than you want of the wrong sort, that's right, too—it's a part of your education!

The boot has boosted many a man—some folks need firing to fire their imagination.

And when you have no imagination and no initiative, you are led—also lead—you don't radiate.

It is this imagination, fancy, gift of visioning that spells success. The dreamers are the workers.

"I could be bounded in a nut-shell were it not that I have had dreams," said Hamlet.

The reason we see so many peanuts in politics and in business is because their imagination is only limited to the cash register, their vision confined to the tape machine.

A man who wants to know the whyness of the wherefore or the thusness of the this, is in the line of evolution—of advancement.

When he begins to think his hide begins to crack, his muscles to expand—he becomes a white hope!

And, gee! What a wallop "why" has! Try it on the next little cock-sure champion of canned philosophy you meet and watch him wince, wriggle, wilt and take the count.

Anybody can make a statement but to "show cause" is another proposition.

And the fellow who makes it his business to go around poking "whys?" ino everybody's affairs is sure to get some nasty jars and jolts.

He must know how to guard as well as punch—to answer the "whys?" as well as to ask 'em.

There are three ways to attain knowledge: "To ask, to be told, to find out for yourself.

The first depends upon your assimilation, the next upon the skill with which the incision is made, and the last upon your perspicacity and perspicuity.

And not one of these processes alone can give you knowledge. They must be used in combination. You must be a seeker, a learner, and a doer.

No man lives to himself alone—we are part of all we have met.

The man who asks gets to know. The man, who, when told takes notice, grows. The man who works, wins.

His imagination, investigation and interrogation give him inspiration—the inspiration born of usefulness.

He stands erect upon his feet, stretching forward to seize every opportunity for advancement.

Our prehistoric ancestors, before the formation of language, used to make known their wants by signs.

When they were happy they danced the Tango—when they were mad they raised Cain.

For countless ages this obtained, and it is even said that previous to the Bostonian Era the inhabitants of this country simply barked at each other—and we can even hear some yelpings yet!

But with the growth of centuries, language of speech was evolved, and men began to hide their real feelings under a cloak of phrases and not a few to lie like some sophisticated lawyers.

Then came the printing press, the phonograph, the movies, osteopathy, and the player-piano.

All these things are the outcome of the eternal query, "why?"—the result of imagination, interrogation, investigation and work.

They are educators.

And the Trade Paper is probably the most alive to the urgency of education, and the gratification of the mental needs of its readers, than any other press production.

It asks, absorbs, gives.

Take up a Trade Paper—note the logic of its discussions, the well-expressed opinions of its contributors, the quality and texture of the paper, the clearness of the type, the beauty of its arrangement. Then tell me if it isn't an education—beautiful, inspiring, strengthening.

Thousands of Trade Paper subscribers are receiving mental uplift and renewing their courage by its means.

The Trade Paper is the leader, the reflector of the Trade world.

It applies chiropractic methods to managerial meningitis, the numerical neuritis of the cashier, or the comatose businessman.

As a spinal adjuster the Trade Paper is a necessity. Without it there is great danger that the glooms will get you.

It manipulates the dislocated vertebrae of declining business until the spinal irritation walks its chalks, trundles its hoop, and you climb into your buzz-wagon again and let-er zip Gallagher!

The Specialized Trade Paper keeps the red corpuscles turkey-trotting, and prevents psuedoanginalitis or imitation heart-disease.

It helps you push business, thereby preventing nervous prostration. For nervous prostration is never occasioned by you pushing your business—it only happens when your business pushes you.

The Trade Paper is the Pathe Weekly of the subscriber.

It gives vivid character sketches of the passing great. It takes extensive tours over the fields of science, business and invention. It teaches by living, moving, word-pictures the reasons for the failures and the causes of success.

The business of religion is now giving place to the religion of business; and the trade paper is the evangel of the true brotherhood of cooperation and self respect.

Show me the company a man keeps and I will tell you what he is.

Show me a man who subscribes to and reads his Trade Paper faithfully and you show me a man who will "show ME,"—a man alive, alert, ambitious, successful.

He has learned to ask, to seek, and to find. The Trade Paper is his guide, his encyclopedia, his friend.

HE is the WHY of the Trade Paper, and the Trade Paper could not exist otherwise.

The Trade Paper, specialized and classed, supplies him with mental uplift, increases his sum of knowledge, places him in touch with men and things. It is a cathartic, a tonic, and a developer.

And the Trade Paper subscriber in turn provides the gist.

Go to school to the men who know how.

The WHY of the Trade Paper is CO-OPERATION, the greatest force in the world today.

It exemplifies unity of purpose, of endeavor, of achievement. The getting together, holding together and pulling together—the elimination of imperfections and the materializing of ideas and ideals.

SUBSCRIBE FOR AND THOROUGHLY READ YOUR TRADE PAPER.

(Copyright, 1913, Kovnat Advertising Service)

Elbert Hubbard

Is a regular contributor to "Brick and Clay Record." His next article will appear in the Dec. 16 issue. The East Aurora Sage is one of the few entertainers who never grows stale

Has an Old Head on Young Shoulders

Being a Few Remarks About a Young Man Who Has Made His Mark in a Great Enterprise and Several Words Regarding His Sphere of Action

John D. Cavender

Salesmanager, American Refractories Company, Chicago

WHILE it is said that this is a day of young men—that the coming "Captain of Industry" will be one who has profited by the experience of others—few instances are known of youthful hands on the steering wheel of great enterprises.

It is worthy of record, therefor, that John D. Cavender, one of the men mainly responsible for the successful launching of the Refractories Manufacturers' Association, modestly owns up to but thirty years. Maybe the decided majority of silver threads among the brown that crowns his bulging forehead has to do with his success. Maybe—and more probably, it is the brain behind the bulge that has brought about the record of achievement and the promise of a brilliant future.

Nine of that thirty years have been spent in intimate contact with things refractory—men and fire-brick. Seven of the nine with the American Refractories Company—an organization that is "some pumpkins" in the world's production of magnesite. As general sales manager of that company, John D. Cavender has clasped hands and rubbed elbows with a class of men who took considerable of their human nature from the material they made, sold and used. They were, in very truth, "refractory."

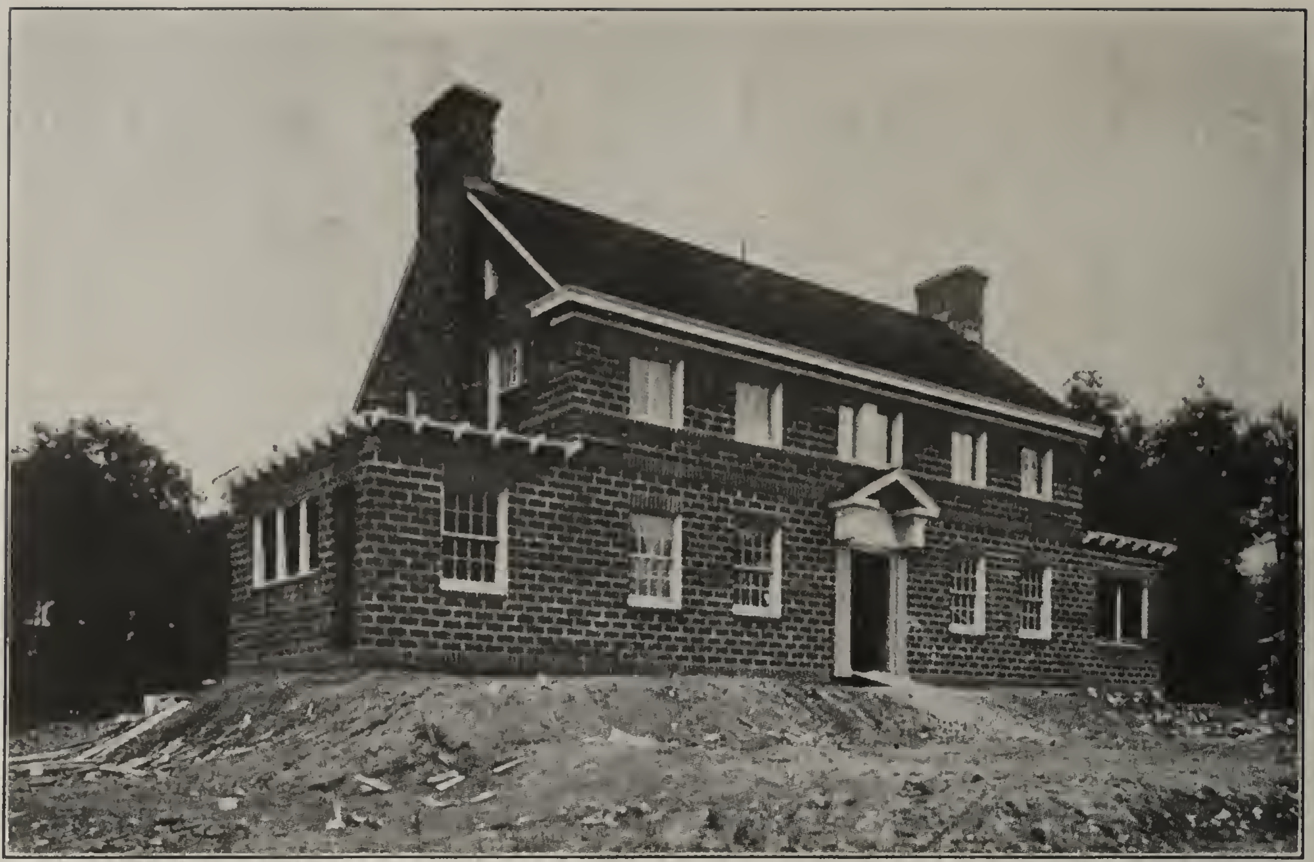
When the question of getting these men together, of deciding upon some method whereby competition should be less like war (and we all know what war is like) the men interested in bringing about a better order of things than had been, turned naturally to John. His was the open countenance that invited trust—his the earnest manner that assured progress—his the suave way that was to smooth out the rough places. So they made him secretary, an office that always carries plenty of chances to invite trust, to iron out differences and, most of all—to work.

When it is set down that the membership of this comparatively new association represents more than 90 per cent of the fire-brick production of this country, a slight idea of the work done, can be gained. When it is added that this immense majority has agreed to do several certain things—none of which have to do with prices—the wonder begins to grow. Piling on this, the fact that the things agreed to, have been the improvement and the standardizing of fire-brick—both movements being for the good of the fire-brick user—not the manufacturer—one turns back to that profusion of prematurely gray hair and the brow bulge and sees a reason.

So is brought to light another "New Competition"—not the ever-growing Eddy policy, but the competition of "who best can serve."

And it marks the dawning of a new day, not only for the men whose fortunes are invested in the manufacture of fire-brick, but for the men who use this material in industries where fires mean melting points and white heats the low tide marks in temperature.

The Article on Small Garages of Brick and Hollow Tiles, announced for this issue, will not appear until the December 2 number. A few cost items have been held back for various reasons, and it has been necessary to refigure some of the plans.



From a Photograph by Courtesy of the National Fire Proofing Company.

The Home of Mr. Squires, Netherwood, N. J. — A Well Behaved and Decorous Example of an Accepted Design.

Use of Hollow Clay Tile for External Walls

Architects Get Pleasing Effects from Material

By Wallace Carrol Illington

A new field for the manufacturer of hollow building block is the external wall of residences and factory buildings. Carefully selected to insure uniformity in color, and a harder burned block gives a material that meets the approval of the architect and interests the builder. Usually a special small size is made for external walls, but the standard stock block has many friends.

HOLLOW Clay Tile, used practically in all modern construction where a fire-proofing material is desired for the interior walls, partitions and floors, is receiving the attention of the architect for exterior walls and the pleasing effects secured, the economical advantage it has in the laying and the building artist's desire for a larger unit, promises to give it wide employment.

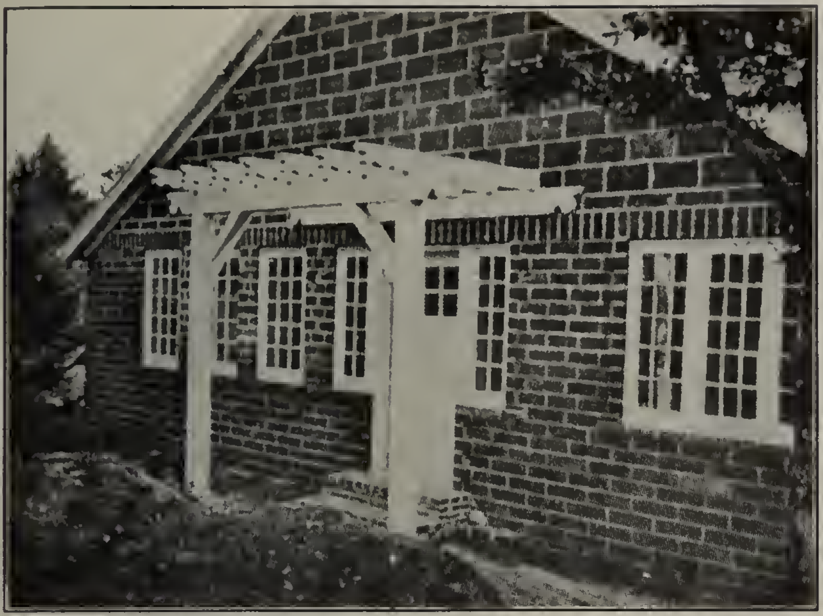
With the advent of the hollow clay tile or block its sponsors offered it only as a fire-proofing material. It was intended to supercede common brick in the wall, the maker and the builder insisting it be given a facing of front brick. The revival of the stucco finish, however, especially in residence construction, early showed the architect that the hollow clay tile lent itself to this treatment and its frequent employment has proved its popularity in this field.

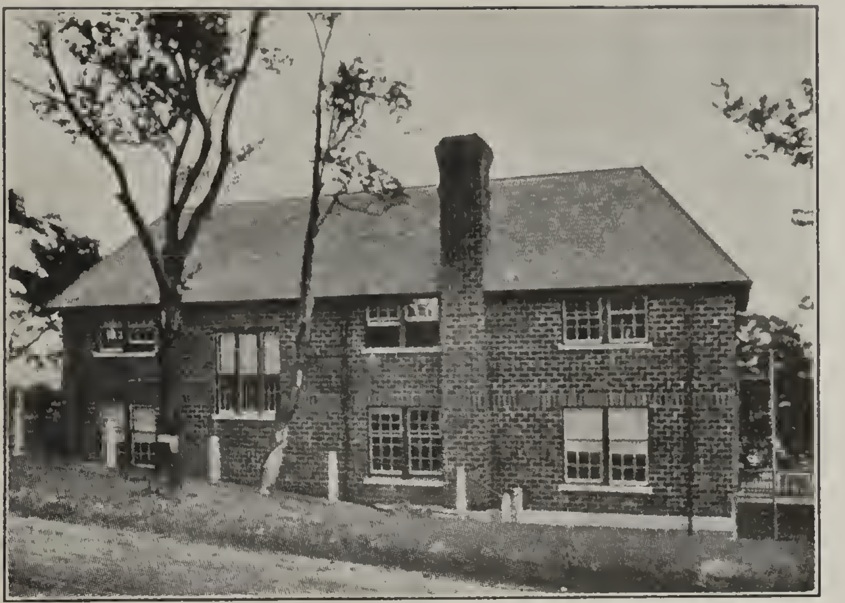
Within the last few years there has been a tendency to use the tile for exterior walls. This suggestion came, undoubtedly from an occasional employment of the block in small buildings where architectural beauty was not sought. The erection of a barn, to the owner's idea, did not necessitate any particular attempt to secure a pleasing effect. Why not leave the block undressed? Unsightly? Yes, but economical.

This treatment of the hollow block certainly was not idealistic, to say the least. Inasmuch as the economical exigencies of construction were the controlling factors, these blocks were the regular stock tile used for exterior purposes when they were intended to be concealed. The scoring, designed to furnish a key for the plastering of the interior walls, of course, were conspicious. Then there were the mortar joints laid carelessly and the varied colors and shades of the block, which never had been burned with any idea of uniformity. These made the job look like Josephs many-hued coat and the general effect was far from pleasing.

This employment, however, gave the architect an idea. First, he demanded as much care in the mortar joints as he would with face building brick. Then, he insisted that the block be selected with some idea of uniformity. Many houses, some of them highly artistic in treatment, were built on these lines, but it was not until the tilemaker saw the possibilities of the new field that the hollow block became a real contending force in the market of exterior wall material.

The manufacturer burned a more uniform ware. He left off the scoring. He made his tile more impervious. When he began to do this he made it possible for the hollow clay tile to be exposed and be frankly treated instead of being





Here are three striking examples of the exterior wall built of hollow tile. The upper left hand picture is a bungalow made of Denison Interlocking Tile, the picture being used through the courtesy of the Oregon Denison Tile Co. The picture at the top right is the Barnard School, Riverdale, N. Y., mentioned in Mr. Illington's article. The lower picture is the cold storage warehouse of the Rogue River Fruit & Produce Association at Medford, Ore. The National Fire Proofing Co. and the Oregon Denison Tile Co. supplied the material in these two cases.

hidden behind a smear of stucco.

Next came the change in the size of the block. While many architects are partial to the standard sizes, there are others that insist the square block are unmeaning, unexpressive and even disfiguring.

Then came the tile whose dimensions are 4x5x12. This, its sponsors declare, makes it possible to be laid up and bonded like ordinary solid brick. It is recommended also for its economy in weight in transportation, no inconsiderable item in many cases, and for its cheapness of laying. Several manufacturers are making this special block, the national Fireproofing Company probably paying more attention to it than any other single concern.

Any hollow tile manufacturer, however, may make this block, as it is a simple matter to change dies, and it is probable that the future will see it sold by every plant that handles this sort of material.

An article by Montgomery Schuyler, in "Building Progress," discusses this new block at considerable length. "It can not be said that the architectural opportunities have been extensively grasped," says this writer. "That could not as yet really be expected. The thing is too new, and our current architecture is characterized too much by subserviency to precedent, applicable or not, as Emerson puts it, by 'Prehensility of tail.' Judging by the trade catalogue of the manufacturers, few of the practitioners who have shown appreciation of the practical advantages of the new material have lived up to its architectural privileges.

"But there are shining exceptions. One of them is the Barnard School at Riverdale, N. Y. In effect, this is a brick superstructure on a stone basement, the basement being visible only on the downhill side. At a casual glance you might take the superstructure for ordinary brickwork. But, on a second look, you become aware that the scale is different from that of ordinary brickwork, and much more impressive. Altogether, the two fronts are much more impressive than they would be if the 'units' of the scale were reduced to a quarter of their actual dimensions.

"And what is true of this schoolhouse at Riverdale is perhaps even more conspicuously true of the country house at Netherwood, N. J. This is a well behaved and decorous example of an accepted manner of design, one front being in 'Georgian' and the other in what is known, not very accurately, as 'Dutch Colonial.' The detail is quite 'correct,' and unexceptionable in either case. But what I wish to call your attention to is how much the detail gains from the scale, from the increased size of the units.

"The flat arches over the windows of the first story in the 'Georgian' front, for instance, the projected cordon marking the floor-line between the stories of the same front, would require in brickwork, in order to take their proper place and to receive their due emphasis, two or three rows of brick, whereas on the larger scale of the hollow tile, a single row amply suffices for this purpose.

"And so also, and perhaps even more so, with the arch at the end of the veranda in the 'Dutch Colonial' front. That would be petty and ineffective and manifestly incompetent in a single row of 'headers' in brickwork on the ordinary scale. Concentric rows of two or three half-bricks would be needed to give it scale enough for its place and its function. Yet you perceive that single row of the actual units is here again quite enough for the purpose."

Mr. Schuyler is very hopeful in his forecast of the possibilities of the new block characterizing it as "A chance for a New Architecture."

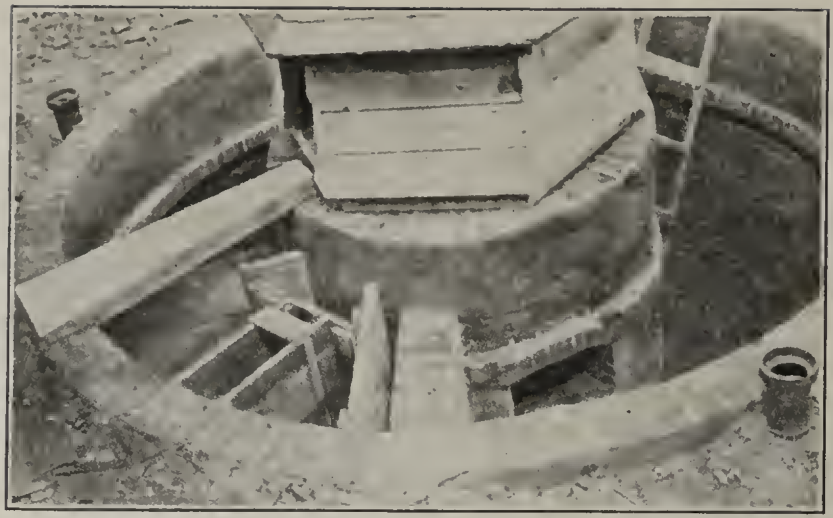
In my reference to the smaller block and its pleasing effects, I do not wish to be understood as saying the regular square tile, or the 8x12 tile, cannot be employed advantageously in exterior wall construction.

As a matter of fact I have seen some excellent examples of the larger block, the manufacturers, of course, leaving off the scoring and paying some attention to uniformity in burning.

Modest Garages—How to build them of Brick or tile

This article will appear in the Dec. 2 issue with plans and cost items; every detail of construction being given so that the plans may be of practical value.

"Sewage Disposal in the Farm Formerly Was Carried On Largely Through the Back Kitchen Window. This Problem Now Confronts the Farmer



"A Baffle Board in front of the Settling Tank will Prevent Disturbances and the Stray Discharge and Hair Pins Will Sink Quietly to the bottom."

Sewage Disposal

How to Build a Plant for the Country Home

By Benjamin Brooks

THE problem of sewage disposal in the country home and in the farm house is vital. Life itself may depend upon it. Benjamin Brooks, a well known Western engineer, writes an instructive and practical article in a recent issue of the "Technical World" magazine on this subject. He points out how to build of brick and vitrified sewer pipe a simple and most efficient plant. The illustrations are from the "Technical World" magazine which generously permitted the use of the original pictures and drawings appearing in Mr. Brooks' article.

IN SOME respects the cities are healthier than the country. I read Thoreau and other nature literature, and like it; but all the same it is upon going *to* the country for a vacation, not upon returning to the city, that I submit to having myself punctured by Dr. Watson's needle full of typhoid preventive.

The reason the cities are ahead of the farmers on sanitation is because they have had to be. Problems of sewage disposal overcome by cities generations ago, are now confronting the farmer for the first time. Sewage disposal on the farm was formerly carried on largely through the back kitchen window.

Five years ago a Chicago firm was greatly astonished to receive an order from a remote but prosperous farmer for a first class porcelain bathtub and "fittings." The firm wrote back, asking him if he didn't mean an enameled tub, advising him of the high cost of the porcelain article. The farmer answered immediately to the effect that he knew what the proper stuff for a bathtub was, that he had the money to pay for it; also, that he was as good as any city dweller and was going to have what he wanted.

A great many farmers have since come to the same conclusion. Their wives have read the hot-and-cold water advertisements in various magazines and their daughters have just returned from college.

The inevitable result is a gasoline-driven pump at the well instead of a bucket on a rope, a complete piping system upstairs and down instead of a barrel on the back porch, and a fully equipped bathroom that uses up more than a hundred gallons of water per day for each member of the household.

But now comes the farmer's real problem—how to get rid of the hundred gallons per. In summer the old sump hole down in the corner of the lot is overflowing into the vegetable garden and the duck pond. The flies are "just awful," the atmosphere is also "just awful." Typhoid threatens. The farmer must have a sewage disposal plant.

Sewage always contains a multitude of bacteria. Certain kinds of these discompose garbage into its original elements. But these little workers to operate to advantage must have certain conditions. These conditions are to be found in sewage disposal plants, which are constructed in such a way as to meet this need. Among the farmers they are becoming more common. A sewage disposal plant, then, is nothing but a "bug farm;" but it must be remembered that the "bugs" are exceedingly fussy. Some must live in water without air, others must live in air with just a little water. They prefer quiet neighborhoods and resent disturbances. You see now why the old-fashioned sump is not a suitable bacteria farm.

The first stage of a farm sewage disposal plant is a settling tank sunk in the earth. For a family of four, it should be about five feet deep, four feet long, and three feet wide. The inlet pipe from the house should enter it at a grade of about three inches to a hundred feet and turn down under water to prevent splashing. A baffle board in front of it will also prevent disturbance in the tank; and the industrious bacteria, although experiencing much inconvenience due to changes of environment and sudden inrushes, will manage to dissolve and disintegrate a part of the putrescible matter. Meanwhile the stray dish rags, hair pins, or other obstructions will tend to sink quietly to the bottom.

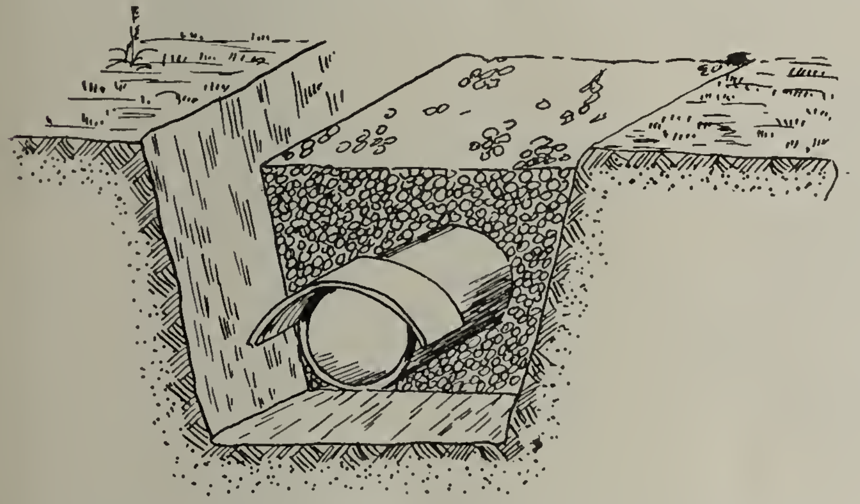
The sewage then passes under another baffle, over the end wall at the far end of the settling tank, and so into a discharge chamber with a siphon at the bottom. The sewage having risen to the proper level, the siphon—just a plain flush tank siphon always to be had in the market—automatically empties the discharge chamber.

From this point the sewage is ready to be treated by the

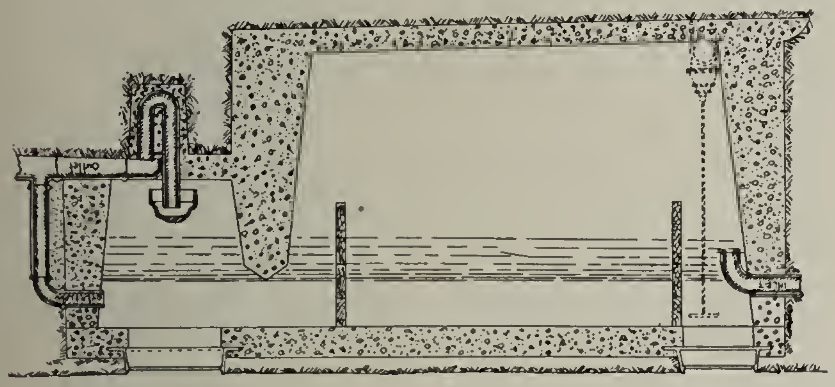
Looking Down on the Baffle Boards in the Septic Tank. These Boards Obstructing Objects and Causing Them to Settle to the Bottom.

bacteria which prefer a rugged existence in the open air rather than the calm humdrum life led by the tank dwellers.

The ideal home for aerobic bacteria or "fresh air bugs" is a pile of loose stones flooded from time to time with rich and delectable sewage. We have, therefore, but to lay a line of three-inch vitrified clay sewer pipe in an open trench leading away from the settling tank and then fill the trench around it with broken stone about the size of a pigeon's egg.



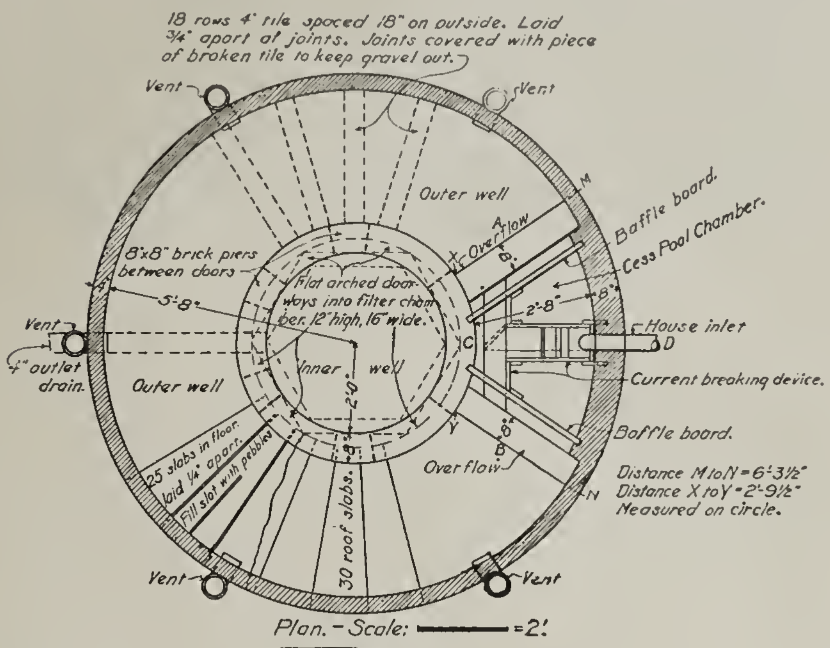
Method of Surrounding the Vitrified Sewer Pipe with Broken Stones. A Piece of Broken Pipe Placed Over Each Joint Prevents the Stone from Falling Through Into the Pipe, but Allows the Sewage to Percolate Through the Broken Stone.

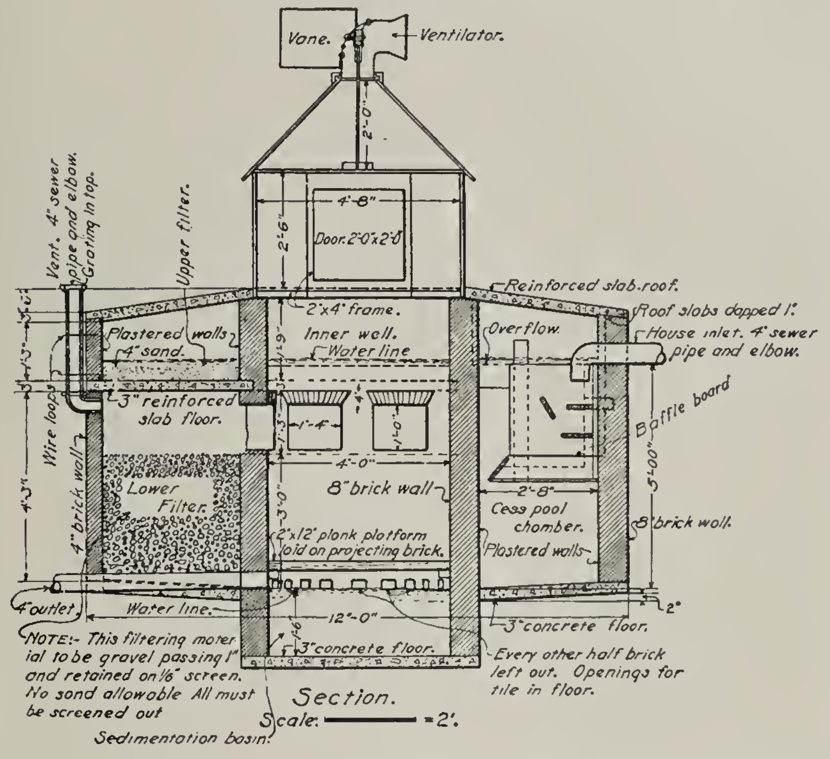


A Cross Section of a Small Settling Tank with Intermittent Discharge Siphon Which is Shown at the Right of the Drawing.

In order to allow for possible repairs, lay two lines of vitrified clay sewer pipe in two rock trenches each about one hundred feet long. The pipe is not porous, of course, for then the winter frosts would burst it, and plenty of room must be left at the joints for sewage to leak out into the rock trench.

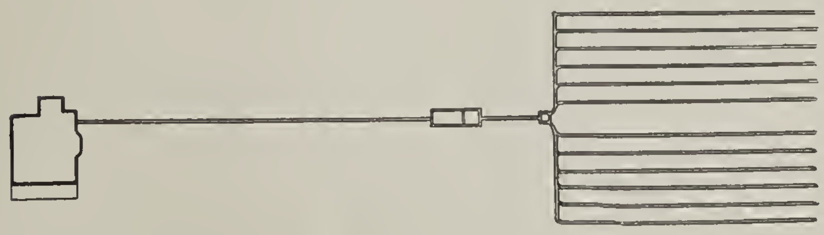
All the materials for a sewage disposal plant, in fact, must be of the best on account of the strong chemical nature of sewage. Tanks should be built of excellent brick set in rich cement so "slushy" that the joints cannot be entered by the point of a trowel. The brick themselves are acid proof. Where concrete has to be used, it must be of the best, with a carefully troweled surface, for such concrete as is ordinarily used for water culverts or sidewalks is soon destroyed by sewer gas. Metals should be used sparingly for they are all sure to corrode rapidly.





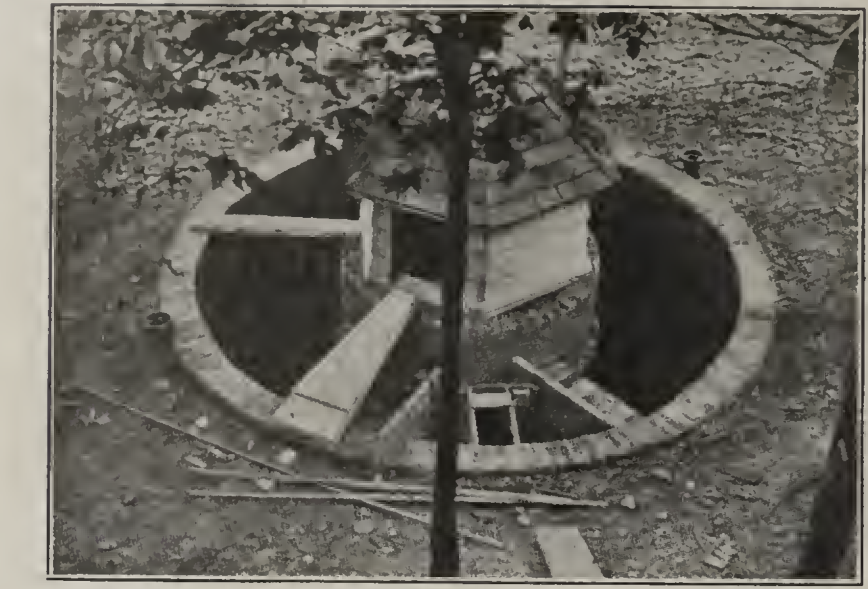
Ground Plan of Circular Tank, Sixteen Feet in Diameter, Recommended by the Iowa State College Engineering Experiment Station.

Cross Section of the Circular Tank Designed by the Iowa Experiment Station, Showing the Larger Tank Sunk in the Ground with Another Smaller Tank Inside It.

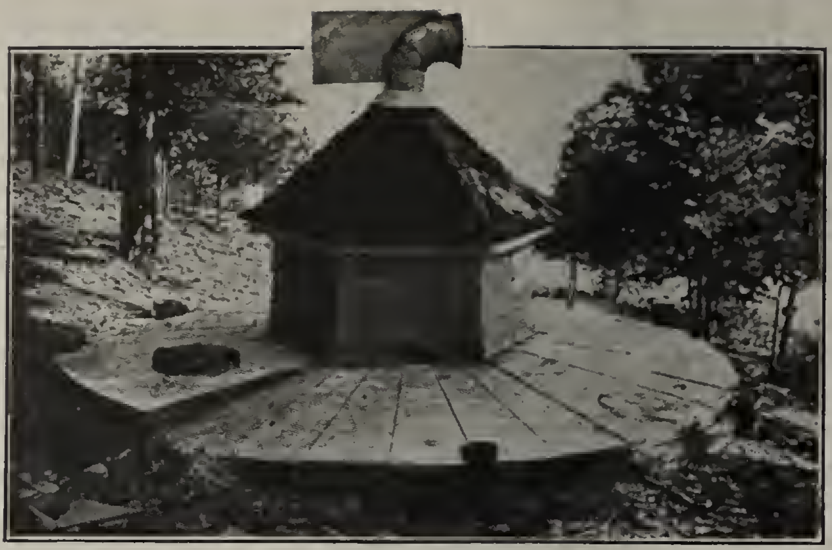


Ground Plan, Showing Arrangement of House with Settling Tank of Brick and Distributing Tiling.

Having thus been provided with model housekeeping apart-



Inner and Outer Walls with Corbels Ready to Receive Filter Slabs. See Illustration That Heads This Article, Showing Baffle Boards in Position.



Roof Slabs in Place Ready for the Covering of Earth. This Illustration, As Are the Others, is from Photographs of a Plant That Has Been in Actual Operation.

ments, the aerobic family are quick to move in. During the flooding of their dwellings they may be figuratively said to stock their pantries and to eat greedily.

Now, of course, there are many modifications of this simple lay-out. The tank, for instance, can have a sort of double bottom with a slot in the upper one to let down the settling solids, and a sluice gate in the lower one to sluice out the sediment every few months.

If the ground slopes sufficiently and the amount of sewage permits, liquid can be sprayed continuously over the rock trenches instead of flooding them intermittently—in which case there is no need of the flush-tank siphon in the settling tank.

Again, if the soil is very porous and sandy, we do not need broken stone, but may simply bury the clay pipe in the soil. The finer the gravel, the purer the water coming from the disposal plant, *but* the more liable is the kitchen grease to clog up the whole system.

The Ventilator on Top of the Tank to Permit Fresh Air to Stream Through.

Since no settling tank is perfect and no siphon is absolutely proof against clogging, and no stone trench entirely proof against freezing, the Iowa State College Engineering Experiment Station has evolved a very compact and efficient disposal plant all in a nutshell, with neither siphons, valves nor exposed beds. It gives great promise of success.

This plant, shown in the illustrations, consists of a circular tank sixteen feet in diameter sunk in the ground, with another smaller circular tank inside it. The large outside tank is a shallow two-story affair, while the inside one is a deep well. Sewage flows into a settling pocket on one side, and, having overflowed this, streams out over the second story, making a shallow lake for the pleasure of the anaerobic or sea-going bugs. It then strains through a bed of coarse sand, drips through holes in the floor, and rains down on the fresh air cranks that live in the broken stone down stairs. Having been shorn of all its objectionable features by these voracious ones, it trickles down to the bottom of the central well and then flows harmlessly away. Ventilators, meanwhile, cause fresh air to stream through tank.

From all this it appears that a sewage disposal plant on the farm is a matter of careful planning and attention to certain necessary details but simple in construction, cheap in cost and can be built by any farmer who wants to do it.

Revival of China Clay Industry

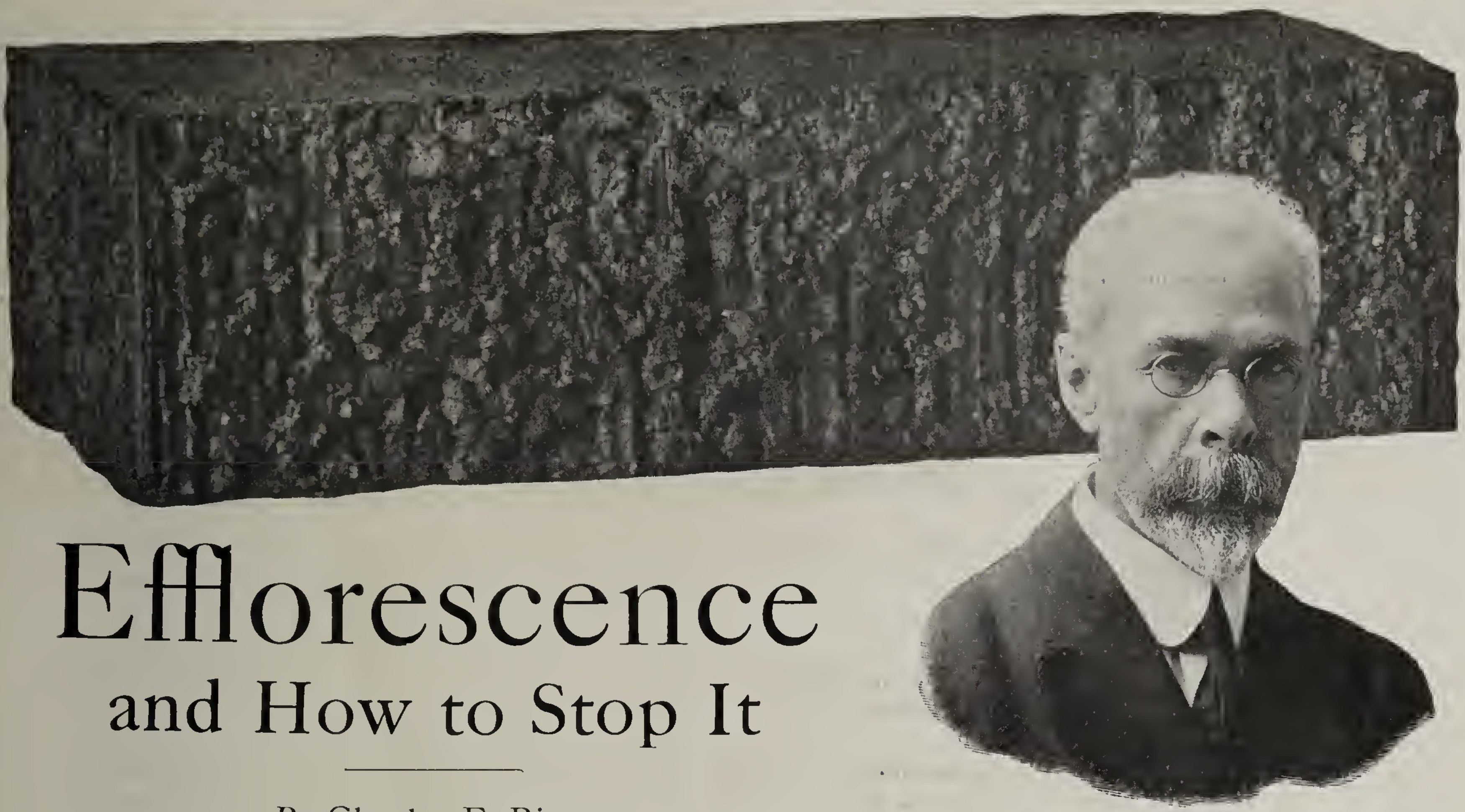
Development of the china clay industry in the United States is expected to progress more rapidly as a result of advancing prices for English clay. The industry has had a somewhat checkered career under the influence of high customs duty, low duty and no duty.

Until the Wilson bill, 18 years ago, put clay on the free list, the duty was $5 a ton. American clay never was in strong demand among potters, who found fault with carelessness in washing and preparation. But producers were advancing and attracting attention from potters, when duty free clay put all of them except the Brandywine Summit company out of business.

The Payne-Aldrich bill carried a duty of $1.25 a ton, and quarrying of the clay again took on an industrial aspect. There was brought from England last year 278,276 tons of white china clay, of an invoice value of $1,629,105. Under the Underwood bill the clay will come in free, and already British products have announced an advance in price. They give as their reason a strike of their workmen, in progress eight weeks, which, it is asserted, will force them to increase wages. "The American tariff increasing British wages," is the view of a clay expert.

It is recalled that when the Wilson bill put clay on the free list the price abroad went up $2 a ton. English clay laid down in Trenton costs the potter about $12.50 a ton. American clay, it is stated, can be delivered at a lower cost, and as producers are conforming to the potters' idea of washing and preparation, it is predicted the producing of white china clay is destined to become an industry of some magnitude.

R. Griffen Miller, treasurer of the Newark Clay Company, while in Philadelphia recently on business of the company said he did not regard removal of the duty as having any effect other than to figure in the diminution of Government revenue.



PROF. CHARLES F. BINNS.

Efflorescence
and How to Stop It

By Charles F. Binns

Director of the New York State School of Clay-Working

SCUM, judging from the interest displayed by readers of "Brick and Clay Record," who bombard the Question and Answer department with increasing frequency, is about half the evil around a clay plant. Despite the frequent discussions on this subject and the simple cures recommended, there seems to be no abatement in this interest.

Prof. Charles F. Binns, director of the New York State School of Clay-working and Ceramics, and one of the best known authorities, has contributed a paper on this subject. His explanation as to the CAUSE of Scum, his methods employed to DISCOVER that cause, and his treatment to CURE the evil, are so simple and so easily followed by any clayworker, that his contribution is one of great value and worth pasting in a scrap book for future reference.

IT SEEMS that this question will not down. Notwithstanding all that has been said and written upon it in recent years the inquiry appears with persistent regularity, "How shall I prevent my brick from scumming?"

Various answers—some correct, some incomplete and some misleading—are given from time to time and for this reason it appears opportune to give once more a simple and explicit account of the phenomenon and the way it may be cured.

It has been pointed out by Lovejoy and others that by far the most numerous cases of scum occur in the dryer—the burn only showing up what was already on the brick, when they were set in the kiln. This being the most usual condition it will be dealt with first.

Most clays and shales already contain substances which are soluble in water. These are sometimes chlorides, such as common salt, chloride of sodium, or chloride of calcium.

It is not often that chlorides cause troublesome scum so that we will not deal with these at present.

The other form of soluble salt is the sulphate, either of lime or magnesia or both together.

When salts are soluble in water they come to the surface as the brick are dried. The significance of this fact is that a very small portion of salt is thus concentrated on the face of the clay instead of being distributed throughout the mass. Evaporation only takes place from the outside and as each drop of water is driven off by the heat of drying, its place is taken by another creeping up through the substance of the brick from the center. But each drop of water carries in solution a tiny morsel of the salt. It cannot carry this away with it because the salt does not evaporate as the water does. The salt, therefore, is left behind.

The water, which keeps coming from the inside, driven by the heat, also carries tiny morsels of salt and these likewise, are deposited so that little by little all the salt is withdrawn from the inside of the clay and left on the surface.

If there should be a considerable quantity of salt present it may be seen on the dry brick as a delicate fur or coating. More often than not it is invisible until the brick are burned, when the dark color of the brick shows it up.

Sometimes these sulphates are already formed in the clay but often they are produced in the process of weathering and tempering.

A very common impurity in clay is the bright, golden mineral pyrite. Sometimes the grains of this are so small as to be invisible. At other times good sized fragments are found. This substance is the sulphide of iron and when it is exposed to air and moisture it changes to the sulphate of iron which is soluble in water. This, in itself, causes a brownish scum on light burning clays and would do no harm in a red clay but for another condition.

When the sulphate of iron comes in contact with fine grained limestone, which is common in clay, the sulphate of lime is formed and this is taken up by the water and deposited on the surface of the brick as already described.

Another source of soluble salts is the water itself. Very few natural waters are free from lime salts held in solution. The most troublesome is this same sulphate, but if the so-called "sulphate water" is used the lime may be on the clay and the sulphur in the water.

There are cases, to be dealt with presently, where lime alone will cause a scum but in the vast majority of instances both sulphur and lime are necessary.

Here is a simple test for the water: Take a clean glass vessel, a tumbler will do, and fill it with water. If the water is at all muddy it should be strained through blotting paper or a piece of fine mesh fabric. Procure a small quantity of chloride of barium, which is a crystalline salt soluble in water. Drop a crystal or two into the tumbler containing the water to be tested and stir with a clean pencil or paper knife. If a slight milky cloud forms in the water it shows the presence of sulphur. This is a source of danger because the clay probably contains lime already.

To test the clay is not so easy. In fact, to properly test a clay for the presence of soluble salts is a task involving considerable skill and care.

Lime is detected easily if it is present in quantity and in the usual form of the carbonate. The clay is moistened and a few drops of hydrochloric acid are added. A brisk effervescence or foaming proves the pressure of a carbonate probably of lime, but this is not a salt soluble in water.

Scum is not due directly to carbonate of lime, although carbonate of lime, in the presence of "sulphur water," may become sulphate of lime, which is a frequent cause of the trouble.

A practical test of the clay may be made by mixing a portion with distilled water made by condensing steam. Several bricklets are shaped and slowly dried. One half of each is then scraped or sand papered to remove the surface skin. The bricklets are then set in the kiln and, after burning, the difference in color between the scraped and the unscraped parts will show conclusively if the clay is inclined to scum.

A second test may be made at the same time, using the ordinary mixing water. A comparison of the two tests will show at once whether the clay or the water is responsible for the scum.

If it should happen that the pieces are scummed on both the scraped and the unscraped parts, though this condition is not common, lime probably is in the clay and sulphur in the coal.

By thus carefully locating the source of the difficulty the problem of a cure can be attacked intelligently.

The general remedy and, in fact, the only effective one, is to use barium in some form. Chloride of barium is the cheapest because it is soluble in water, and, therefore, can distribute itself thoroughly through the clay, but it has the disadvantage of introducing another soluble salt. If the least excess is used the chloride of barium will itself cause a scum although not such a bad one as the sulphate of lime. Carbonate of barium is safe but in order to be effective it must be used rather in excess because, being a fine, insoluble powder it cannot penetrate the clay as completely as can the soluble chloride.

The reason for the action of barium is that it has a strong affinity for sulphur and upon uniting with it the sulphate of barium is formed. This is insoluble in water so that the sulphur is held in the interior of the brick and cannot reach the surface to form a scum.

The barium has nothing to do directly with the lime. All it does is to take possession of any sulphur that may be present so that there is nothing for the lime to combine with to form a soluble salt. This explains why there are some forms of scum which barium will not cure.

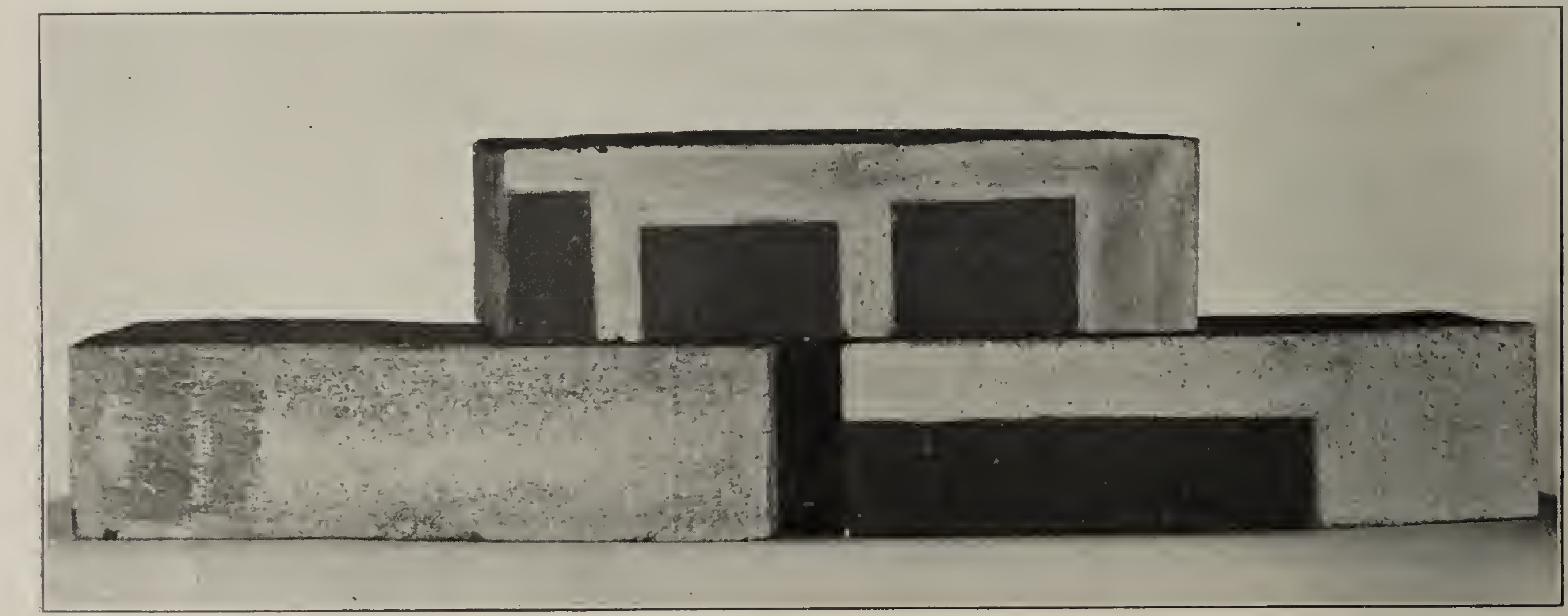
Under some conditions lime itself becomes soluble in water. When water contains carbonic acid the lime may be there as a bicarbonate which is soluble or there may be a solution similar to that known to druggists as "lime water." Neither of these forms of soluble lime causes troublesome scum unless the clay contains a considerable amount of lime in itself.

If the two conditions are present at the same time a bad form of scum may appear. In this case the only cure is to doctor the water itself or to change the source of supply. Boiling the water would help, because the lime is precipitated as in the form of the fur inside a tea kettle, but it is scarcely practicable to boil water in sufficient quantities to serve.

Another way is to use a large tank and to stir some quicklime into the day's supply. This will precipitate the bicarbonate but the remedy must be used with care because lime water may be formed. The correct amount of quicklime must be ascertained by experiment.

The cases where the trouble arises from other sources than sulphates are rare. In most instances the scum is caused by sulphates. In most cases, also, the scum is formed in the drier.

One point remains to be mentioned. If a clay containing lime should be dried by the heat from cooling kilns it is quite possible that sulphur gases are carried into the drier. These will attack the lime and form the soluble sulphate. Barium is the cure in this case, also, because it sets a trap for the sulphur and thus prevents it from uniting with the lime.



Bonds in Brick Work

MUCH attention is now being given by architects to brickwork. This is noticeable in nearly every new house of architectural merit. Bricks with good texture and fine color tones, and bonds that make a pattern in the wall are employed. Less and less is being seen in new work of the old-style "running bond," or the representatives of it that house painters used to block out with red and white paint.

In "House and Garden" of recent date, Harold Donaldson Eberlien describes several of the bonds that are now employed. He says the most common bonds, in fact almost the only one employed during a great part of the nineteenth century, is the running bond, in which all the courses are composed of "stretchers," that is to say, brick laid lengthwise, the only "headers" or endwise brick visible being at the window jambs, at the starting of piers and pilasters and in straight header courses at more or less frequent intervals where their use is made obligatory by the local building laws to tie the face-wall to the backing. Each course breaks joints vertically with the courses immediately above and below. Running bond is perhaps the simplest and certainly the least interesting and artistic way of laying brick and has little to commend it except considerations of economy.

The Flemish bond, in which every course consists of alternate headers and stretchers is, after the running bond, the one we most commonly meet with, having been generally used in our brick buildings of Colonial date, in which the black header and red stretcher effect is so often noticeable. Flemish bond is constructionally honest, artistic and satisfying, and its almost universal employment in modern building of Colonial style cannot be too strongly commended.

The double-stretcher Flemish bond which, as its name denotes, consists of two stretchers together, followed by a single header in all courses, the headers being laid above the joints between the two stretchers in the course next below. It is coming more and more into vogue in America and has been used in some of our largest buildings with signal success.

For the vertical joints between the contiguous stretchers, mortar colored to exactly match the brick is often used, thus making a blind joint and giving the effect of one double-length stretcher. The use of double-stretcher Flemish bond sets a big, broad scale and can be employed to advantage in large wall surfaces, particularly where it is desired to take off somewhat from the appearance of height, as the strongly marked horizontal lines have that effect. This feature can be further emphasized by slightly increasing the thickness of the horizontal mortar joints.

English bond and Dutch cross bond, like both the single-stretcher and double-stretcher Flemish bond are replete with artistic feeling and deserve to be far more widely known and used than they now are in America. Not only are they essentially artistic but they are strong and honest in structure. Both English bond and Dutch cross bond have alternate courses, the one wholly of stretchers and the next wholly of headers; but in the English bond the stretchers of all the courses come directly above each other while in the Dutch cross bond the stretchers of the first and fifth courses break joints with the stretchers of the third and seventh courses respectively and thus throughout, giving a diagonally diapered appearance if the mortar joints and the hue of the brick be judiciously contrasted.

The bonds mentioned are the most usual kinds, but one also meets with special adaptations of recognized types; it is, however, quite sufficient for general purposes to remember the five enumerated. In fact, many people, who are supposed to have some knowledge of such matters, have difficulty in keeping the differences clearly in mind and generally fall down in trying to describe them.

An Ode to Everlasting Clay

A poem read at Denver Session of the
National Terra Cotta Society.

By W. E. Dennison of San Francisco, Vice-President.

When Noah stood on Ararat,
His foot slipped on the slimy fat
Of Mother Earth, and I recall
Some words of his, although not all—
"The Rotten Stuff!"

He little thought that Clay met Clay,
As he went sliding on his way.
I was beneath his dignity
And got his old malignity—
"I Was the Stuff!"

Nor reck'd he that I bore the tree,
Whose branch proclaimed my victory,
O'er boundless waters of the flood;
Invited his assorted brood
"To Get the Stuff!"

His children's children, all, my cup
Have snatched and drained with bottom up;
And as they drank, unheeding they,
That maybe I was their own clay,
"Their Very Stuff."

How then, can man, whose end is mud,
Sit up and boast of his blue blood,
When all the ichor in his veins
Is but the liquor, with my brains,
"To Make the Stuff?"

I know not why, who bends the bow,
Or he who plodding wields the hoe,
Or he who rules with kingly power,
Should fill with brags his every hour—
"That He's the Stuff."

Why, I'm the feet of every man
Who treads on me, and e'en the ban
Of all his other mortal parts,
Save what eludes death's fatal darts,
"Immortal Stuff!"

Aye, there's the rub! I shape the bowl
With man's remains, but of his soul
I know naught, save it gives me mould;
I hold but dross, while it is gold
"And Priceless Stuff."

And yet, I am the envelope
Of loving man and misanthrope.
I hold them both within my thrall.
It seems to them that I am all—
"The Only Stuff."

One thing I know, while round is round,
In this my own terrestrial bound,
That all of earth's own facts are mine,
And all the myriad suns will shine,
"Shine On My Stuff."

The Upper Picture Shows the Market Where the Pots Made by the Native Clayworker Were Sold Before the New Order. Today His Wares Go Into the Modern Channels of Commerce.

The Lower Picture is a Scene in the Philippine School of Ceramics, Students Being shown at work at the Kneading Table. Note the thrifty appearance of the pupils at their Lessons.

What the Ceramic School Has Done for the Filipino Clayworker

A Wonderful Evolution Marks One Decade's History

By Irwin C. Walker

This is the second of a series of two articles by Mr. Walker on the Filipino as a clayworker. In the last issue of "Brick and Clay Record" the primitive methods employed by the nation before the advent of the American soldier were shown both by description and by pictures. In this article Mr. Walker tells of the School of Ceramics and what it has accomplished in a few brief years.

FROM a primitive molder of jugs and pots of the most simple design and sunburnt brick that never felt the vitrifying influence of a down-draft kiln, to the modern clayworker who fashions beautiful vases in decorative design, with all the delightful glazes, and who presses into shape brick, sewer pipe and the other present-day products of the annealing oven—a step like this to the average student of things ceramic takes him back through the ages when civilization was young.

However, an evolution such as this has occurred within the past decade and the school boy of the present day has been a witness to it.

The art of clayworking is as old as the knowledge of man. History tells us that the first known civilized people—the Chaldeans, plied the trade five thousand years before the birth of Christ. From then, through the successive steps of man's progress, fashioning utilities from clay has been one of his chief industries.

From the primitive to the modern, however, has been a slow process of evolution. Centuries have bridged these two points—development has been at snail's pace, and it was not until within the past century that man cast aside the crude methods and began to seek improvements, not only in processes but in manufacture.

That a race of people has leaped this gap of almost immeasurable time and gained in a decade what it took

This is One of the Kilns Built by Students and is Used in Instruction Work at the Manila School.

the rest of the world centuries to secure, is the more wonderful and the Filipino, who has the distinction, is the one, single people who, by a force of unusual circumstances, has been so honored.

It is to the indomitable courage—the progressive spirit and the unbeatable aggressiveness of the American who drove the Spaniards from the islands of the Luzon and rescued the little brown men from yoke of restrained development, the Filipino owes his wonderful advancement —not only in matters ceramic but in whatever pursuit of human endeavor he has engaged in.

Those who read my article in the last issue of this magazine on the primitive Filipino and his history as a clayworker know what crude methods he employed and how little he knew of modern methods when the American soldier took hold of the Philippines and started out to civilize it. It is the purpose of this article to describe the Filipino's advancement from that day on until the present day.

Throughout the Philippines deposits of common clay are found. Much of this can be used for building brick, hollow building tile, roofing tile, drain tile, sewer pipe and even vitrified paving block. There are also large deposits of fire clay and kaolin—the white clay used in china ware.

In Paracle and in Baguio the pure quartz used in glazes and porcelains is to be had, and in Ilocos Norte there is a granulite dyke which compares favorably with the Cornish stone of England. This pegmatic rock is much used in glaze and porcelain composition.

Thus we can see there is ample raw material for practically every known burned clay product—including terra cotta, faience, fire clay products, stoneware and porcelain, as well as the more commonly used products already mentioned.

Recognizing the great opportunity for advancement in clay product manufacture the Bureau of Education founded by the United States Government not only to teach the young Filipino the usual courses found in our own schools, but also industrial pursuits, organized a school of ceramics in 1910. Prior to this, of course, American capital had been invested in clay plants to some extent and the Filipino had felt the enlightening influences of these and, in a measure, was in a most receptive mood.

This school was started in Laguna Province but later was moved to Manila and became the ceramics department of the Philippine School of Arts and Trade.

Students constructed the building that housed this school and the Government installed therein all the necessary equipment, consisting of one blunger of 40 gallons capacity, a settling tank of 120 barrels capacity, one kiln 12 by 24 ft., containing two ovens, a frit kiln, eleven potters' wheels, a kneading table, a modeling table, a brickmaker's table, drying racks and a filing case for clay samples and tests.

The equipment further includes the following machinery: A cup machine, a saucer and plate machine, a lathe, a ball grinder, a glaze mill and a polisher.

The school accomodates about sixty pupils and, with the equipment mentioned, terra cotta, faience, stoneware, porcelain and practically all other forms of burned clay products are made.

The ceramic department aims to train boys so that they will be able to equip and operate a factory. In the first year of the course the students construct the kilns and make common brick, fire brick, decorated tiles, and common glazed ware of various colors and designs.

Sixteen provinces have submitted samples of clay and on them one hundred tests have been made. Fifteen samples of grayish and white clays, commonly called "yeso," have been received. Of these eight burned a white color, six gray, one red, and two buff. White clays from Los Baños, Laguna, from Nasugbu, Batangas, and from Santa Cruz, Zambales, have been received in bulk and have been used separately, mixed together, and mixed with common clay, in each case with good results. Further experiments with the white burning clays will be made for stoneware and porcelain.

Twenty-nine clays and mixtures have been tested for vitrified brick. Of these, three warped slightly, five cracked, one swelled, fifteen showed too short a range between vitrification and viscosity, and five, with a slight variation of mixture, apparently would make a good serviceable brick.

The most successful experiments were those on refractory ware. Fire bricks, fire-clay tiles, and posts have been made and used in the kilns and have in every way served as well as the imported article.

Practical tests are made in the laboratory to show shrinkage, color, hardness, warping and cracking. These indicate that the clays are of great value for manufacturing purposes and compare favorably with those of any other country.

A Street Vender Under the Old Regime. Today the Filipino's Wares Are Displayed in Stores the Same As in the United States.

The school is sending out graduates each year, these

These pictures illustrate the Line of Work Done by Students at the Manila School—a Decided Contrast to the Crude Pots Shown in the Nov. 4 Issue of This Magazine. The Upper Picture is Faience Work of Second Year Pupils. The Group in the Center of This Page is Terra Cotta Work by Second Year Students. The Group on the Left at the Bottom of the Page is of Vases and Trays Designed and Modeled by First-Year Pupils, While the Group at the Right are Products of Modeling, Pressing and Throwing.

to enter into the plants already established or to become of value in interesting capital to erect new factories.

Only for a few modern factories so far have been erected in the Islands. The others are rather primitive. In the newer plants a Japanese Kiln has been introduced which meets with considerable favor. These kilns consist of two ovens, the first for glazing and the second for firing biscuit. Four of these are now being operated—one in San Pedro Tunasan, Laguna, owned by a Japanese; one in Pagsanjan, Laguna, built by two boys who studied a year in the pottery school while it was in Laguna; another in the primary school at Lumbang, Laguna; and a fourth in the ceramic department of the Philippine School of Arts and Trades. A fifth is being built for a pottery school to be organized in Libmanan, Camarines.

The city of Manila uses a great quantity of vitrified sewer pipe. Other cities will need this as water and sewer systems are installed. Vitrified brick is also needed in connection with sewer construction, as well as for streets. There is a ready market for these products. The material used for a vitrified clay product is shale, impure fire clay, or a common clay. All of these are found in the Philippines and a vitrified brick and pipe factory could easily be started.

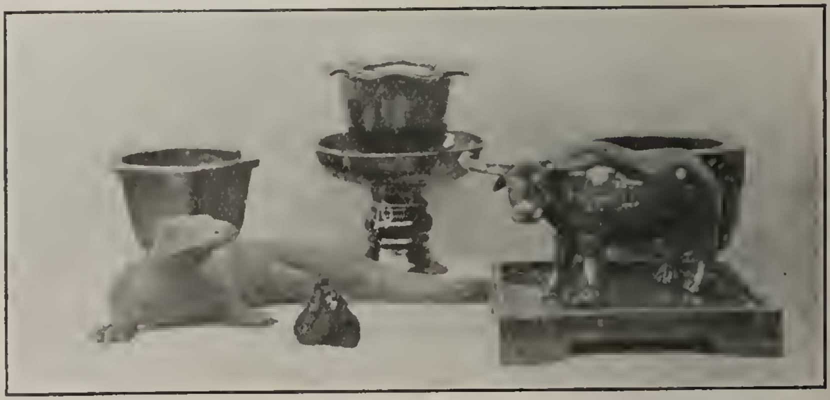
Wherever sugar is made, fire brick is needed. Crucibles and muffles are used. Thus there is a market for refractory ware which could be made there. There is a growing demand for glazed flowerpots, vases, and other decorated clay ware for home and garden adornment. The demand is also growing for table dishes and for crockery for storing and preserving foods.

The use of a common clay and a simple method of manufacture would enable tile to be made in the Philippines at low price with considerable profit. Floor tile, bathroom tile, sanitary ware, and roofing tile can be made more cheaply than it can be imported.

The annual reports of the Insular Collector of Customs for fiscal years ending June 30, 1909, 1910, and 1911 show the following importation of clays and clay products: 1909, 289,944 pesos; 1910, 330,826 pesos; 1911, 442,534 pesos. These sums show the invoice price of the articles, to which must be added wharfage duties and the merchant's profit to represent Philippine values.

The natural conclusion is that effort should be made to supply the demand from the material at hand. But people must first be interested and instructed in this line of work and then taught how to make a living at it. The stable industries of a country usually grow from a humble beginning A large factory could be successful if it were organized by people having practical knowledge of the industry, of the resources of the country, and of the customs of the people. However, the ceramic department of the Philippine School of Arts and Trades aims to instruct students so that they will be able to organize and manage small factories for themselves. If a boy goes to his home and makes a success, other people will soon learn clay refining, glazing, and firing.

That there has been a marked advance in the Filipino's progress may be seen in the work he is doing today as shown in the accompanying illustrations. From the crude pots pictured in the Nov. 4 issue of this magazine to the decorative art work illustrated here is a wide step, but this contrast is just as marked in all branches of the clayworking industry.



Cheap Fuel Plus Continuous Kiln Saves 75 Per Cent

Expert Shows How and Why This Type of Burning System is More Economical Than Down Draft Kilns and Gives Actual Figures to Prove His Point

By William A. Butler

Mr. Butler has given us some very valuable information in recent issues on the continuous kiln. His article in the Nov. 4 issue on "How To Increase the Daily Output of a Continuous Kiln 100 Per Cent," has created more interest than any article on kilns we have printed for some time. Here is another from his pen which is up to the high standard of his previous ones.

WILLIAM A. BUTLER.

DEMONSTRATING in a practical way that low-carbon and cheap grades of fuel can be utilized to advantage in burning brick and other clay-ware, the continuous-kiln system has given an insight into plant economy that is of inestimable advantage to the manager who wants to reduce expenses.

While the ordinary down draft kiln requires a good grade of coal to produce "good burns," excellent results are obtained in ordinary continuous kilns with slack coal and screenings. And it is a poor continuous kiln, indeed, that will not show a saving of 75 per cent in cost for fuel in its favor, over the down draft kiln. No better opportunity for comparision exists than in the relative heat values of natural gas and producer gas and their use in the down draft and continuous kilns.

Pennsylvania natural gas contains 1,000,000 B. T. U. per M. cu. ft., while the best producer gas contains only 150,000 B. T. U. per M. cu. ft., and as many natural gases contain less B. T. U. so also most producer gases are of less heating value. While natural gas is used to advantage in the down-draft kiln, the use of producer-gas in that kiln has generally been unsuccessful, because producer gas has only 15 per cent of the heat value of natural gas.

The fact that producer gas burns brick to near perfection in the continuous kiln shows that at the outset the continuous system has 85 per cent in its favor over the down-draft kiln, and from this fact we may draw some definite and practical conclusions.

Knowing as we do that there is hardly a combustible refuse from mills, factories, plantations, etc., that has not a heating value of more than 15 per cent of good coal, it is absolutely safe to take those fuels which have say 50 per cent of the heat units of good coal, and utilize this heat for brick burning purposes.

According to Nesbitt Latta, in his work, "American Gas Producer Practice," published in book form in 1910, we have the following table showing the heat value of some fuels:

	B. T. U. per pound
Lignites	11,200
Peat (Irish) perfectly dry, 4 per cent ash	10,200
Peat (Irish) 25 per cent moisture	7,400
Wood, perfectly dry, 2 per cent ash	7,800
Wood, 25 per cent moisture	5,800
Tanbark, perfectly dry, 15 per cent ash	6,100
Tanbark, 30 per cent moisture	4,300
Straw, perfectly dry, 4 per cent ash	6,300
Straw, 10 per cent moisture	5,450

Now, a glance at these figures shows us that almost any kind of refuse fuel equals 50 per cent in value to good coal. Although these fuels are far lighter than coal the bulk pound for pound being more than 10 to 1 in some cases, this seeming disadvantage is more than overcome by their heat producing qualities. While it is true that they cannot be handled as readily as oil or gas, they can be conveyed to a continuous compartment kiln by mechanical means, and with properly constructed furnaces will produce results equal to those obtained with the best fuel.

With fuel containing 5 per cent of ash or less, there would need to be no provision made for the handling of ashes, as they would "be lost in the draft of brick burning."

With fuels containing 10 per cent of ash and over, special provision must be made for handling ashes.

As excess moisture in fuel is detrimental to the best results, it would be well to select fuel with less than 20 per cent moisture.

Fuels like saw dust, not containing over 20 per cent of moisture will show a heating value of more than 50 per cent. Outside of our knowledge of its heating qualities, the ease with which steam is raised in mills using this material will readily convince us of its practical use in burning brick.

Any good continuous kiln (Hoffman Kiln Type) will require no more than 250 lbs. coal screenings (of fair quality) for burning 1 M. brick. With the Continuous Compartment Kiln, where the air of combustion, moving through an already burned chamber of incandescent bricks, passes on through specially arranged furnaces of refractory material into which the saw-dust is fed as desired we have as near to practically perfect combustion as one could wish for, and 500 lbs. saw-dust will be amply sufficient to burn 1,000 bricks to the required hardness. A mechanical continuous feeding device is preferable to intermittent shoveling or hand stoking of the saw dust, and the average rate of feeding the saw-dust would be approximately 20 lbs. per hour per 1 M. brick.

While figuring out a system of conveying pulverized fuel to a proposed continuous kiln, I took an engineer into my confidence who was accustomed to installing conveyors for feeding pulverized coal to rotary cement kilns. After I figured out the amount of fuel necessary to burn 1,000 brick, the rate of burning and the amount of coal required for each furnace per hour, he exclaimed, "Great Scott, man, you must be crazy, as I know that it is impossible to keep a flame alive with such a small quantity of coal!"

A burner with natural gas experience in a down draft kiln might also say that it is impossible to keep a flame alive with producer gas. But preheated air for combustion and heat recuperation are the elements which have placed the continuous kiln in a class by itself. As for regeneration, the word is a misnomer, as heat made with the use of fuel or any other agent is never regenerated.

The only thing in the world capable of being regenerated is life. As regeneration means to create anew and this condition does not exist in any industrial furnace, there can be no such thing as a Regenerative Kiln. Now, taking up natural gas again, with our previour knowledge of the subject, we can apply this fuel to the continuous compartment kiln diluted with 85 per cent superheated steam at low-pressure, say not to exceed 25 lbs. Ordinary steam is objectionable on account of condensation, which takes place at the expense of fuel, besides having a tendency to increase the possibility of scumming.

Fuel oil should be applied to the continuous kiln heated to within 10 degrees of its flash point, and after being thoroughly strained, pumped to the furnace at a pressure of 8 lbs. and diluted with low pressure superheated steam, in the proportion of approximately 1,000 cubic feet of steam to one gallon of fuel oil, sprayed as "oil fog."

Of course, it is necessary to install special mixing chambers or combustion furnaces behind the flash walls, or between the kiln compartments, as there is not sufficient space behind the flash wall of the ordinary Continuous Compartment Kiln of the Gas Fired kind, for the proper mixing of these gases. Such a furnace as would be built for burning saw-dust could be readily used for this purpose, without in any way altering it.

We use superheated steam instead of compressed air as an atomizer because of the shortness of the flame the crackling of the oil and roaring noise, and the destruction of a portion of the fuel caused by compressed air atomization.

The Pacific Gas and Electric Company, who operates the largest oil gas plant in the world, as well as being pioneers in the manufacture of oil gas on a paying commercial basis has long since abandoned using air or steam at high pressure for spraying oil. Oil and steam are sprayed into the gas producer with the pressure of the oil never exceeding 10 lbs. and the steam 25 lbs. The company operates 48 oil gas generators, each with a capacity of 150,000 cubic feet of gas per hour. In the year 1912, 6.691,072,400 cubic feet of gas were sold.

The manufacture of oil gas should be very interesting to the brick-burner, as the conditions are not unlike each other as far as temperature is concerned. The generators are 16 feet diameter and filled with checkered fire bricks. When a generator is started the heat is raised to some 2,000 degrees F. The inlet and draft gates are then closed and the generator for the next ten minutes becomes a retort as it were. Oil and steam are sprayed into the generator, and after passing through the incandescent brickwork, pass out the exit pipes into the wash-box, then to the scrubbers. When the ten minutes have elapsed the gas making is discontinued and the heating up commences, which also consumes 10 minutes time. The producer makes 50,000 cu. ft. of gas with each heat, which lowers the temperature from 2,000 degrees F. to 1,200 degrees F.

In the heating up a blast of preheated air is used for combustion and the temperature of the producer is raised 800 degrees F. in a little short of ten minutes.

The amount of oil required to make 1,000 cu. ft. of city gas of 700,000 B. T. U. per M. ft. is 8 gallons in the proportion of 1.3 to heat and 6.7 to make. The loss in the producer would be 20 per cent, while the total gasification loss, comparing the heat units which are contained in the original oil to the purified gas is 25 per cent. When the manufacture of oil gas was first started in 1902, using high pressure for steam, oil and air, there were 30 lbs. of lamp black produced with every thousand cubic feet of gas. At the present time the lamp black produced is less than 5 lbs. per M. cu. ft. The amount of oil formerly required to make 1,000 cu. ft. gas was over 12 gallons, while at the present writing it is less than 8 gallons—a saving of 30 per cent.

In conclusion, I simply wish to state that the conditions existing in the gas generators during the "heating," that is, the first heating up, are very much the same as those in the Continuous Kiln, except that the preheated air in the Continuous Kiln is automatic, while that used in the oil gas generator must be specially made.

Buys New Gear Cutter.

Harry S. Fate, vice-president of the J. D. Fate Co., Plymouth, Ohio, has just returned from New York City, where he purchased another gear cutting machine—this time one of American make. The Fate company recently installed a gear hopper of a well-known German manufacture. These machines are used for cutting cast iron and steel gears used in the clay-working machinery made by the Fates.

The J. D. Fate Company, Plymouth, Ohio, has issued a special catalogue of pugmills for potteries.

Issues Book on Soot.

A book on the subject of soot in relation to boiler efficiency has been published by G. L. Simonds & Co., of 115 S. LaSalle St., Chicago, and contains valuable engineering data now given for the first time. Every manager, superintendent and engineer interested in the important point of fuel economy would do well to send for a copy of this book, which will be sent gratis to any one who sends in a request for a copy.

A Five-Ton Truck Used by the Akron Brick & Tile Co. and which is a Real Money-Maker.

Motor Truck is Profitable to the Clayworker

Census Among Owners Proves Value of Power Wagon

By T. K. Sheeley

An increased interest in haulage among clayworkers has prompted "Brick and Clay Record" to make an investigation as to the comparative costs of the power wagon and the horse-driven wagon. Mr. Sheeley has conducted this inquiry and from the data he has obtained from actual users of the motors he has prepared a series of articles, the following being the first or introductory one. We are sure that the result of his investigation will be found highly interesting to the 10,000 clay product manufacturers of the country.

DOES the motor truck prove a profitable investment to the manufacturer of clay products? At the suggestion of the editor of "Brick and Clay Record" I have made an exhaustive investigation of the subject and from the data and information received from more than fifty manufacturers in various sections of the country, who have purchased trucks—in some cases two or more—and who have given them practical tests, I would say that the brickmaker, the tile maker or the potter must be an exceptional case who cannot cut his hauling cost considerably by the installation of a power-driven wagon.

Recently, through the news columns of this journal, appeals were made to clayworkers who owned trucks asking for brief reports on the actual results obtained. In the Oct. 21 issue a blank form accompanied one of these appeals which made it handy for the clayworker to supply the necessary information. More than half a hundred have supplied the data asked for and others are coming in daily.

It is from these reports, made by actual users of motor trucks, and from personal investigations of certain cases that have come to my notice, I have based this article and upon which I will base other articles in the series which I am to prepare.

The following are the first fifty clayworkers from whom

One Cleveland Tile Manufacturer Finds His Truck Saves Time and Labor and Does More Work at a Less Cost. The Montowese Brick Co. of New Haven, Whose Truck is Shown at the Right, Finds the Motor Wagon Ideal.

I have received data and in subsequent issues I shall print the names of others as they are received:

Akron Brick & Tile Co., Akron, Ohio.
Excelsior Brick & Pottery Co., Baltimore, Md.
Guignard Brick Works, Columbia, S. C.
The Keller Brick Co., Akron, Ohio.
Lake Union Brick Co., Tacoma, Wash.
Montowese Brick Co., New Haven, Conn.
Newberg Brick & Tile Co., Portland, Ore.
American Building Brick Co., Cleveland, Ohio.
Iron City Brick & Stone Co., Pittsburgh, Pa.
Salisbury Brick Co., Baltimore, Md.
Salt Lake Pressed Brick Co., Salt Lake City, Utah.
Hilatt Brick Co., San Diego, Cal.
McQuade & Bannigan, Utica, N. Y.
Champion & White, Vancouver, B. C.
Callam Bros., New York City.
The La Prairie Brick Co., Montreal, Can.
The Ontario National Brick Co., Toronto, Can.
The Ontario Paving Brick Co., Toronto, Can.
The Northampton Brick Co., Northampton, Mass.
Barrett Mfg. Co., Cleveland, Ohio.
Hibbler-Barnes Co., Chattanooga, Tenn.
Edward J. Smith, Albany, N. Y.
Western Clay Mfg. Co., Portland, Ore.
La Clede-Christy Clay Products Co., St. Louis, Mo.
American Clay & Cement Corp., Rochester, N. Y.
Fitchburg Brick Co., Fitchburg, Mass.
Los Angeles Pressed Brick Co., Los Angeles, Cal.
Washington Brick, Lime & Sewer Pipe Co., Spokane, Wash.
C. F. Thomas & Sons Brick Co., Washington, D. C.
Glassmere Transfer Co., Hite, Pa.
Dillon Draying & Teaming Co., San Francisco, Cal.
J. J. Fitzgerald & Co., Philadelphia, Pa.
Brandon Brick Co., Brandon, Manitoba, Can.
Jewell Stoneware Co., Omaha, Neb.
G. B. Raymond Co., New York.
Sayre & Fisher Company, Sayreville, N. J.
M. & T. Co., Cornwall, N. Y.
New England Brick Co., Boston, Mass.
The Washington Silicate Brick Co., Washington, D. C.
The Bach Brick Co., Chicago.
Mansfield Clay Product Co., Mansfield, Ohio.
Greenpoint Fire Brick Co., Brooklyn, N. Y.
Scranton Brick & Tile Works, Scranton, N. D.

This investigation has proven one point beyond all dispute—short hauls are profitable. This contrary to popular opinion and even to that of some manufacturers of motor trucks.

Take for instance, the case of Edward J. Smith, First Avenue, Albany, N. Y. Mr. Smith has a Packard truck and the average length of trips is one and a quarter miles. Five horses are kept and two treamsters are employed. The truck and the teams are worked about eleven months out of the year. This truck is bringing in its owner a profit on its investment far greater than the investment in the teams.

Keasbey & Mathison Co., Ambler, Pa., have two one-ton trucks—a Grabowski and an Overland. The average trip is about 1,000 yards round trip. They run both trucks all the year around and write that they are well satisfied.

I only cite these two particular cases to show that short hauls pay. Later, in another article, I expect to take up this subject in detail and give some comprehensive figures.

As to the cost of the motor truck compared with the horse-driven wagon, this reply from the Montowese Brick Company, of New Haven, Conn., is conclusive: "We have a

A Five-Ton Truck Used by the Keller Brick Co., of Akron, Ohio. Note the Ease with which a Load is Dumped.

It Does not Make Any Difference What the Material is—Sewer Pipe or Brick, the Motor Truck Does the Work Cheaper and Better

5-ton White truck which makes from 30 to 40 miles per day, twelve months in the year. We find that one truck equals three teams as to work done but at *less* expense."

W. T. Akers, secretary of the Akron Brick & Tile Co., Akron, Ohio, says his concern has a 5-ton White which averages 45 miles per day and hauls 2,000 brick to the load. From 16,000 to 20,000 brick are hauled a day on this truck.

This Shows with What Ease a Brick Manufacturer Dumps Brick Right on the Job.

A record of every trip is kept and paid for at the team rates. The truck's earnings, over all expenses, are from $250 to $300 per month. When considering this case bear in mind that the average length of trips is five miles, that the roads are hilly and that where twelve horses were kept before only four are now in the barn.

The American Building Brick Company of Cleveland, Ohio, has two 5-ton Peerless trucks. These average about 75 miles a day each, making an average trip of 15 miles.

Here One Man is Unloading Face Brick on the Job. There is No Place a Team and Wagon Fits in That a Motor Truck Cannot Go.

These trucks are equipped with a screw power hoist dumping body and deliver 30 tons of brick a day. I find that one of these trucks does the work of from six to eight horses and does work that would be impossible almost for horses to do. This company found the first truck purchased so profitable that a second one was bought recently.

The Keller Brick Company of Akron, Ohio, has a White truck and finds that it returns a profit each month on the investment. The Guignard Brick Works of Columbia, S. C., also has a White and it is doing the work of three teams at a less cost.

There is no attempt here to give a detail report on trucks that are in use, these particular cases being cited merely to pave the way for future reference.

In the Dec. 2 issue of this journal, however, I expect to show how motor trucks cheapen brick hauling cost and will not only refer to actual cases, but give comprehensive figures with tables showing a complete record of machines covering several months. These tables will cover both short and long haulage work, with the time the truck was in service each day, the mileage and the number of brick delivered. The cost figures will be included, showing just what the truck cost for the year—the investment, the interest, the garage charge, the driver, repairs, gasoline, lubricants, depreciation—and in fact every item that should be noted to give a fair and concise comparison with horse drawn wagons.

The Mississippi Glass Co., Manufacturers of Fire Brick, Use This Big Truck for Deliveries. It is Found a Profitable Investment by This Concern.

Haulage is one of the serious problems of the clay-worker—whether he is running a small business or large one—and the motor truck seems to be the modern solution. Judging from the number of power wagons in use among the clay plants of the country, I would say that the clay-worker is fast realizing this to be true.

WANT A SUPERINTENDENT FOR YOUR PLANT?

Insert an ad in the Classified Columns. All good men read the classified ads in "Brick and Clay Record."

John Andres

Who's Who

Being Somewhat Personal and a Little Bit Reminiscent, With the Clayworker as the Target of the Camera Man and Editor

G. E. Goldner

I.—A Face Brick Manufacturer Who Made Up His Mind Rather Early
II.—A Paving Brick Maker Who Conducts a Truly Up-to-Date Plant
III.—An Expert Burner Who Knows How to Invent Things Worth While

A CHILD'S DREAM BECOMES A REALITY

NOT so many years ago four little boys who were neighbors used an abandoned brick-yard down in Hoosierdom as a play ground. All through the warm, Summer days they busied themselves at their childish games and were merry indeed.

One of these little Hoosiers, however, was of more sober mien than the others and quite often stopped at his work of molding fancy mudpies and grotesque animals to look with yearning eyes at the great hills of clay and the tumbled-down sheds that once housed a hand-process brick plant.

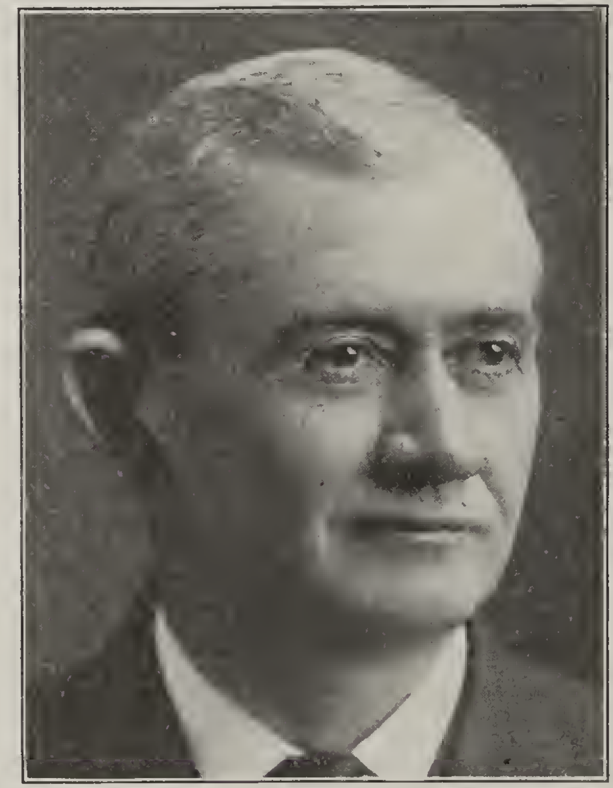
"Gee! This is a great place," he is said to have exclaimed on more than one occasion. "Sometime I'm going to have a brickyard all my own."

This chubby-fisted boy was John Andres, and John Andres, as most of us know, is the secretary and treasurer of the Standard Brick Company of Evansville, Ind.—one of the most progressive manufacturers of face brick in the country.

It will be seen, then, that it pays to let the right sort of a boy play around abandoned brickyards for it gives them ideas and IDEAS count in these days of hustle and bustle.

RUNS MODEL PLANT

IT is something to be the chief guiding spirit in a clay plant that has the reputation of being one of the few model institutions in the country. Walter Colyer, of the Albion Shale Brick Company, of Albion, Ill., enjoys this distinction, and he came by it honestly, for the Albion plant is a new one and he had much to do with its construction.


Walter Colyer

AN INVENTIVE GENIUS WHO REALLY INVENTS

EVERY normal man has an idea he is an inventive genius, it is said. That accounts for the overtaxed warehouse of the United States Patent office. The few of us, however, that succeed in inventing something that is worth while can be counted. The rest would work a comptometer overtime 833 years to add up.

G. E. Goldner is one of the few, for he has invented something that is worth inventing and, therefore, is a real inventor and not just a make-believe, like some of the rest of us.

Mr. Goldner is a resident of Ft. Dodge, Ia., and because he happened to be interested in the manufacture of burned clay products he turned his inventive attention to something that would be of material benefit to the clayworker.

One of Mr. Goldner's inventions is a continuous kiln and another is a device for finishing the ends of drain tile. Either one of these is good enough to put him in the successful inventor class. Mr. Goldner's kiln, although of recent origin, has been given practical tests in several yards—one of these being a home town concern—the Vincent Clay Products Company. It pays to be an inventor.

How Cox Got Into the Game

BEING THE STORY OF A YOUNG MAN WHO FELL HEIR TO A RUN-DOWN CLAY PLANT

By Iverson C. Wells

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(*Continued*)

WITH Sawyer, my old superintendent, dead and Simpson, my valuable young assistant, in jail and under arrest for his murder, I found myself very much "up against it," to use a familiar slang phrase. I knew practically nothing about the manufacturing end and had to rely absolutely on my two assistants.

Still, here was the plant and some of the kilns already were under fire for my second burning. I had orders that must be filled and besides there were my plans to buy the new equipment, which Sawyer's death interrupted in such a tragic manner.

I went over to the jail to see Simpson the first thing on the morning of his arrest. Despite his surroundings and the serious charge that had been made against him, he greeted me with his usual cheery smile.

"Looks pretty bad for me, doesn't it?" he asked, as he reached his hand through the bars of the cell door. "They've hung men on less evidence than they have on me."

I tried to assure him that he must not feel that his case was hopeless, but made a miserable failure, as I could not conceal my anxiety for his safety.

"We can get a good lawyer—the best to be had in Cleveland," I told him, "and we won't let anything go undone that should be done. These lawyers have a way of getting around pretty deep holes, you know."

Simpson shook his head and smiled sadly at me.

"I am not trying to fool myself with any false hopes, Mr. Cox," he said. "I know the case looks bad. Why, I even catch myself almost believing that really I did shoot the poor old fellow. You see everything circumstantially points to me and I can't see how any lawyer or a carload of them can get around it."

A lawyer I had employed before going to the jail arrived at this time and for the next hour Simpson went over all the events leading up to the tragedy. When he had finished the lawyer turned to me and said:

"It is a pretty tough case. Looks bad, very bad." Then turning to Simpson he hastened to add: "But don't get despondent. We will have to trump up a defense of some sort. Of course you had a lot of provocation and probably the old fellow must have threatened you when you met him on the road—"

Simpson stared at the lawyer while he was talking and as he recognized the full import of what the attorney was saying he interrupted him:

"Who said I met him last night! Have I said I shot him? You are going on the presumption that I am guilty and that isn't the sort of lawyer I want."

"Now, of course, with outsiders it is well that you talk this way, but between friends and your lawyer we must discuss the situation deliberately, evading nothing," said the old attorney as he rubbed his withered palms over his knuckles.

Simpson sat down slowly, resting his head between his hands and staring off across the cell. It was the first sign of any dejection I had seen, and I patted him on the shoulder but said nothing. Finally he looked up.

"Good God!" he exclaimed. "They'll hang me, I know it! But as sure as I am standing here before you I want to say to you both that I am as innocent of that man's death as either of you."

The coroner's inquest was held that afternoon and, as we expected, Simpson was held to the grand jury. That meant nearly two months in jail for him, as there was little chance to get bail for him.

I went to Cleveland the next day and employed a well-known criminal lawyer and he returned with me that evening. We spent several hours with Simpson.

"The boy is innocent, of course," he said to me when we had left the jail, "but we are going to have a hard time convincing anyone else, especially the jury. Of course, we expect to find some little hidden clew that will clear away all this and that means we will have to do some hard work between now and the Fall term of court."

I employed a detective and put him to work quietly around town. I gave him every assistance possible, but after the first few days' fruitless effort I left him to himself as I had to look after the plant which I had neglected sadly for several days.

I had telegraphed for a new burner and a superintendent and these arrived before the week was over. We soon had things back in shape and I took a train one evening for Pressville to see the Steinway Machinery Company about my new plant. By appointment early next morning I met DeJones, the engineer who had drawn my plans for me and we went over to see President Steinway.

We spent the entire morning going over the drawings. DeJones returned to his home on an early train with the understanding that he was to see me the following day and we were to close up the contract, if everything was satisfactory.

In the afternoon Steinway and myself discussed the financial end. He had promised, if you recall, that he would furnish me with the necessary equipment whenever I got ready.

"Cox, I've been giving this case of yours considerable thought of late. Of course, I understand you have been making good with a big G ever since you started, but you must admit your methods are not according to the set rules of the clay game."

"I know I have not any practical experience in the manufacture of brick," I replied, "but what difference does that make, so long as I employ good, sound business sense?"

"Yes, I understand all that," smiled Steinway, "but still it wouldn't hurt if you knew a little more about making brick."

"Good Lord!" I exclaimed impatiently. "I can get all the good brickmakers in the country I want at $25 a week—men that have spent their lives at the game and know the ins and outs from A to Izzard."

"Yes, but don't you think—"

"I think nothing! I can hire someone to make brick. What bothers most of the clayworkers today is not the manufacture—it is the selling. Now, selling is my long suit. I know how to do that, as I already have demonstrated."

"Well, I have seen too many fellows fail in this game and in nearly every case you can safely say it was because he knew nothing about it." Steinway snapped out his convictions as if he was past further arguments.

"You mean they had no business qualifications of any kind," I retorted. "I venture they would have failed at anything they tackled. I read the other day in "Brick and

Clay Record" a little reference to Hugh Chalmers and how he got into the automobile business," I replied, determined to hold to my guns. "Now, Chalmers was with the National Cash Register Co., and he was such a valuable man he was paid $100,000 a year salary, so it is said. And mark you, it wasn't because he knew how to make cash registers that gave him value, but because he knew how to organize men and how to sell.

"When he decided to quit his $100,000 job and go into the automobile business he did not know a carburetor from a foot pump. Look what happened to him! He was not long in the automobile business before he was a dominent factor in the entire industry. And I doubt today if he could call by name one-tenth of the parts that go to make up a car."

Steinway listened to me patiently and when I paused he said:

"Chalmers may be an exception. I admit he has made good, but there aren't many Hugh Chalmers floating around the country and especially not many who are seeking to get into the clay product business."

Steinway chuckled and seemed to think what he had said was a good joke. I suggested that possibly I might not be in the Chalmers' class but I was going to try and get there as fast as I could.

"You are a good business man, Cox," Steinway finally condescended to say. "I admire your pluck and I have faith in your future. But you can't blame me for wanting to go a little slow. You see, you have asked me an unusual favor. Very little business is done on such a credit basis as you have suggested."

"I am not asking any unusual credit. I have enough orders to keep my two plants busy for a year, if I don't sell another brick. These orders are for my entire output. They are bonafide. I can go to my local bank and borrow money on them. If they are good enough for my banker they ought to be good enough for you.

"Now, Mr. Steinway, let's get down to business. I've got to take the afternoon train home and we have only a short time to talk. I want to buy my plant from you—that is all that I can. There is just about as much sentiment back of the desire as there is business judgment. You treated me fair with my first equipment and you have shown a personal interest in my success. Now, I prefer buying from you, but if you cannot see my terms as I want to make them, it is your privilege."

Steinway sat motionless for a moment or so and when he did speak it was only to say:

"You come up when you get ready to buy and we will fix things up, I guess." He held out his hand to me and as I took it I replied:

"Mr. Steinway, I am going to give my order for that new machinery tomorrow. I suggest that you have your salesman come to Mauryville by noon at least, as I expect to sign up a contract with DeJones and he will take full charge of buying the equipment, laying out the plant and even superintending its construction. Your man can take the order and you and I can finish up our end of the deal later in the week."

It was nearly 6 o'clock before I reached home that evening. I found my detective friend awaiting my arrival.

"I have discovered a very important clew," he told me quietly as we walked up towards my house. "I'll have Sawyer's slayer behind the bars before morning."

I looked at him in amazement.

"Then, you mean to say that Simpson did not—?"

The detective nodded his head assentingly and I hurried him into the house, barely able to wait to hear what information he had secured.

(To be Continued in the Dec. 2 Issue.)

No Changes Made in Paving Specifications

AMERICAN SOCIETY OF MUNICIPAL IMPROVEMENT TO CONFER WITH AMERICAN SOCIETY FOR TESTING MATERIALS AND N. P. B. M. A.

Following the recommendation of E. H. Christ, chairman of the brick committee of the American Society of Municipal improvement which held its annual meeting at Wilmington, Del., Oct. 7-10, no changes were made in the paving brick specifications previously submitted. Acting further on Mr. Christ's suggestion, the society referred the paper read by Prof. Edward Orton, Jr., to a sub-committee which was empowered to confer with a similar committee from the American Society for Testing Materials. Professor Orton's paper outlined the paving brick specifications proposed in 1913 by the latter society.

The vote on these two propositions brought forth considerable discussion, particular as to the selection of samples for testing. Mr. Christ and other members of the American Society of Municipal Improvements, stand for a more selective sampling than does the Testing Material committee, which recommends random or mass sampling.

Chairman Christ is seeking to get a uniform specification for paving block and expects that the report submitted by his own committee and that by Prof. Orton's committee from the Testing Material society, may be made to conform to each other without seriously affecting the vital points of either. Mr. Christ also hopes to make this specification so broad that the National Paving Brick Manufacturers' Association will find it acceptable.

"There is little in the No. 1 specifications of the paving brick association that conflicts with what we want," said Mr. Christ recently, in discussing the proposition with a representative of "Brick and Clay Record." It certainly will be better for the brick people to have one standard specification instead of several. Our recommendations are very close to the paving brick association's specifications and it will be a simple matter to get a compromise through."

Mr. Christ, who was the first vice-president the past year, was honored by being elected to the presidency of the society. C. C. Brown, editor of "Municipal Engineering," was made secretary, *vice* A. Prescott Folwell, who declined to serve longer. The next meeting of the society will be held in Boston, Mass.

GET A SITUATION
by advertising in the Classified advertising pages of "Brick and Clay Record"

Face Brick Makers and Dealers to Meet in Joint Session

PLANS for the annual meeting of the American Face Brick Manufacturers' Association at French Lick Ind., Dec. 10-12, are maturing and the session is expected to be a distinct step forward in the new movement to make the annual event one of practical value to every member.

The Face Brick Dealers' Association of America of which F. Lawson Moores is president and R. L. Queisser secretary, also is to meet at French Lick at the same time, in accordance with the original plan outlined in the constitution and by-laws on their adoption at the organization of the dealers' association May 22, 1913.

The American Face Brick Manufacturers' Association has held two annual sessions prior to this. One at which the association was organized was held in Chicago in March, 1912, and the second, a year later, in the same city at the same time as that of the National Brick Manufacturers' Association. Feeling that an open-season meeting was much more advantageous it was decided to hold this year's convention separately from the parent body.

"We plan to have the best meeting in our history when we convene at the French Lick Hotel," declared Secretary R. D. Hollowell to the Pittsburgh correspondent of "Brick and Clay Record," "and we will meet in a hotel built of buff brick, which is something worth considering."

The details of the meeting have not been worked out. There probably will be a dozen addresses or papers presented to the convention, and each one of these will create no small amount of discussion.

It is known, however, that the session will differ greatly from the previous sessions of this body and that the program will contain features more on the practical side of the business than the problematical.

The success of the National Paving Brick Manufacturers' Association and its convention at Cleveland a few weeks ago, has encouraged the face brick manufacturers to follow closely along the lines established by that body. The face brick dealers feel the same way about their meeting and the joint session will mark a distinct revolution in meetings of this nature.

The face brick manufacturers organized their association to not only take up the problems of manufacture but also those of the market. This means, therefore, that delivery and transportation will demand considerable attention.

The dealers organized their association along the same progressive lines. While primarily it was intended to take up the problems that confronted the dealer himself it is the aim of the organization to bring about a closer and a more friendly relationship with the manufacturer and the joint sessions will tend to encourage intelligent discussion and to correct many abuses that exist on both sides.

Every face brick manufacturer in the country, as well as the dealers, should attend the convention, whether they are members or not. Both associations ask this journal to extend an invitation to these non-members.

ILLINOIS ASSOCIATION MEETS IN JANUARY.

Definite Date Not Selected by Secretary Huckins—Plans Strong Program.

The Illinois Clay Manufacturers' Association is to meet the last week in January or the first week in February, Secretary Huckins having not just determined which of these two weeks the date is to fall on. The annual convention, however, will be held at Champaign and every effort to make it the most heavily attended meeting in the history of the organization is being utilized by Secretary Huckins.

Some very serious problems are to be discussed at the coming meeting, the proposed organization of a traffic department and a legal advice department being chief among those to be considered.

It is highly probable, also, that an entire reorganization of the association along more aggressive lines will be brought up for consideration.

More Than a Mile of Roofing.

Some interesting figures appear in the contracts issued in connection with the construction of the new Michigan Central Terminal at Detroit. One of these is the 200,000 square feet of J-M Built-Up Asbestos Roofing, involving five carloads of material, to be used for railroad sheds alone. If placed end to end these sheds would extend over a mile. The H. W. Johns-Manville Co. is also furnishing the waterproofing, J-M "Vitribestos" smoke stack lining, two thousand feet of J-M sectional conduit, and 16,000 lineal feet of J-M "Asbestocel" pipe covering for plumbing, heating and power lines throughout the building.

IOWA ASSOCIATION PLANS BIG MEETING.

Manufacturers in This State Arrange for Vigorous Campaign Next Year.

December 10, 11 and 12 are the dates selected by the Iowa Clay Manufacturers' Association for the annual convention at Des Moines and Secretary Platt, who is arranging the program, says it is going to be the liveliest session ever held by this body.

Several very important propositions are up for consideration and it is probable that next year will find this body of clayworkers taking a far more aggressive stand in the building and construction field than ever before.

MRS. JOHN UNDERWOOD DIES.

Mrs. John Underwood, wife of John Underwood, of Detroit, Mich., inventor of the Underwood Burning System, died Nov. 10 at her home after a short illness. Mrs. Underwood was taken ill about two weeks ago with tonsilitis which developed into leukemia.

Installs New Equipment.

DeLatte & LaGrange, manufacturers of common, press and fire brick, of La Charles, La., recently remodeled its plant, installing J. C. Steele machinery. The plant will have a daily capacity of 50,000 brick daily. The new dry sheds will have a capacity of from 600,000 to 700,000 brick. The only portion of the old plant retained is the burning system, the four kilns still doing duty

Brick Paved Streets Impress Chicago Officials

These two pictures were taken during the recent trip of inspection of the Chicago Board of Local Improvement to Cleveland and Buffalo. The larger picture shows the party on a Cleveland brick paved street which it has just inspected. The second gentleman from the left is Chairman Schilling. W. H. Hansen and Fred. Lucke of the Chicago Paving Brick Publicity Bureau are next and Chief Engineer Hittell, with the light soft hat, is standing next to Mr. Lucke. Fred. Burkhard, member of the Board, is the next gentleman standing in the foreground and Frank Sinna is the third from the end. The smaller picture is a portion of the same party at Niagara Falls, standing on the bluff overlooking Lewiston.

RECENTLY the members of the Local Board of Improvements of Chicago went to Cleveland, Ohio, and Buffalo, N. Y., at the invitation of the National Paving Brick Manufacturers' Association, to inspect the municipal and country highways in the vicinity of those two cities. W. H. Hansen, Fred. Lucke and E. L. Middleton of the Chicago Paving Brick Publicity Bureau, accompanied the party and acted as special guides.

The trip of inspection was made as a result of Assistant Engineer Gableman's attendance at the recent show-me-first convention of the N. P. B. M. A. at Cleveland. Mr. Gableman was very favorably impressed with the form of paving brick construction in use on the Cleveland streets and on the famous highways of Cuyahoga County, and declared until then he never had believed that such a superior form of construction was possible.

In the Chicago party on this last trip were: George A. Schillings, chairman of the Board; Fred Burkhard, Frank Rydzwski and Frank Sinna, members, and John Hittel, chief engineer.

The several hundred miles of country brick roads in and around Cleveland and the state brick roads of New York in the vicinity of Buffalo were inspected thoroughly and the Chicago visitors were most favorably impressed with the trip.

"I never was so surprised in my life," declared one member of the party on his return to Chicago. "We often had heard of these streets and highways, especially those in and around Cleveland, but never dreamed they were anything like they really are."

As a result of this trip Chairman Schilling is going to permit some sample streets to be put in under the No. 1 specification of the N. P. B. M. A., something that has been denied the brickmakers heretofore. There are many miles of brick paving in Chicago but the Board of Local Improvements has insisted heretofore that a soft filler shall be used, because of the frequent necessity for digging up the streets.

Secretary Blair, however, showed the members of the Board during their Cleveland visit, that brick-paved streets, built in the permanent way as they were in this city, could be cut into and restored without injury. In fact, actual cases were shown Chairman Schilling and his associates, where the pavement had been cut into and which defied detection, even under the closest inspection.

It is probable that county officials from Chicago and some of the Illinois State officials will be asked to make a similar trip of inspection at an early date.

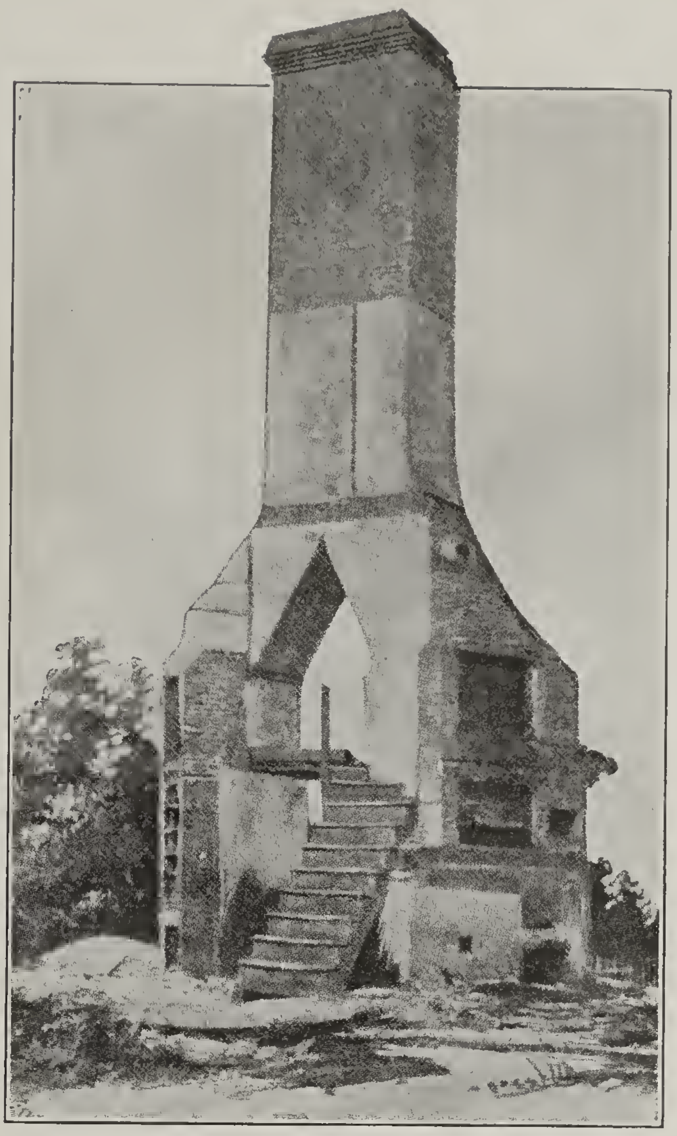
SECOND HAND MACHINERY

Brickmakers, if you have some misfit machines — machines that have grown too small for your plant — sell them through our Classified ads and take what you get and use it toward buying a larger and more modern machine. Classified ads are watched by bargain hunters.

It Drew the Fire of a Counterfeiters' Den

The remarkable chimney recently illustrated in "Popular Mechanics" was disclosed by the recent tearing down of an old tavern at Kingston, Rhode Island. It shows to unusual advantage the intricate design and execution of a now obsolete type of masonry. The chimney, as shown, is divided in its lower part into two sections, thus providing fireplaces in both wings of the house. The space between the sections was utilized for stairways. A typical New England bean oven may be seen in the right-hand section.

One can readily understand how this great mass of brickwork in the center of the building, when thoroughly heated by its dozen or so fireplaces, would store up an immense quantity of heat and act as a radiator, keeping the house warm throughout the winter nights. Aside from its interest as a specimen of bygone architecture, there are some most exciting tales connected with this structure. In the stormy revolutionary days it was a widely known and famous gathering place, and its reputation not always of the best. A gang of counterfeiters once made their headquarters there, and when at last they were forced to flee from the officers of the law, friendly villagers aided them to escape into the west, which at that time meant New York State. During the demolition of the building, a die for making Spanish dollars was found concealed in the timbers, undoubtedly a relic of this episode.



An Interesting Specimen of Revolutionary Architecture.

This Month Nineteen Years Ago Here is What Happened—

Being a Brief Review of the News That Appeared in the November 1894 Issue of "Brick."

The Eagle Iron Works, of Des Moines, Ia., announce "a new iron frame dry pan clay crusher" with roller bearings supporting the weight of the revolving pan and mullers.

Belgium shipped $2,930 worth of fire brick into the United States the month previous.

A new use for drain tile—irrigation, is proclaimed.

A decided decline in paving brick and concrete pavement is bemoaned. Brick paving was quoted the year before (1893) at $2 per square yard; concrete at $4.50 per cubic yard. A Cincinnati contractor now accepts work at 98 cents per square yard for brick and $2.50 per cubic yard for concrete!

John H. Nonnemacher, of South Bethlehem, Pa., receives an order from the Bethlehem Iron Co. for 600,000 brick.

Chambers Brothers Company, of Philadelphia, Pa., announced extensive alterations in their shops completed.

The Crawfordsville Ceramic Company "draws its first kiln of ware, consisting of over 4,000 gallons, with a loss of only 6 per cent."

A letter from D. V. Purington, president of the Purington Paving Brick Co., protests at the way tests are made for pavers. He cites the inconsistency of the rattler and declares what is needed, "is simply that all brick delivered shall be the best the yards are capable of making." He concludes with the same piece of advice which Secretary Blair, of the N. P. B. M. A., gave at the 1913 convention in Cleveland, Ohio. "When the inspection at the kiln is such as to absolutely preclude the necessity of inspection at the point where the brick is used, no chemical analysis, absorption, abrasion or other tests will be required."

Rees Thomas, an employe of the Ironton (Ohio) Fire Brick Works, breaks all records by setting 104,000 brick in a kiln.

Business is reported as "decidedly improved."

"The first ceramic school this side of the Atlantic"—the American Clay Workers' School, Ohio State University—just opened, is reported as starting off with a most encouraging patronage. Prof. Edward Orton, Jr., the director, is very optimistic.

The Macon (Ga.) Tile & Brick Co., with George A. Dure, president, is organized.

The DeKalb (Ill.) Brick & Tile Co. decides to double its capacity.

The officers of the new West Terre Haute (Ind.) Brick & Sewer Pipe Co. are announced. Will P. Blair is named as secretary and Will S. Houston, president.

The Mason City (Ia.) Brick & Tile Co. is reported shipping large orders to Minnesota.

The Vitrified Brick Works, of Coffeyville, Kan., has on file orders for more than a million brick.

S. Walt, the Tittabawassee brickmaker, of Saginaw, Mich., sells 1,000,000 brick at $4.50.

New Methods and Processes

A Department of Technology Wherein Recent Experiments and Discoveries Are Exploited for the Benefit of the Clayworker Who Wishes to Keep Abreast of the Time

Edited by

Charles S. Kinnison

Ceramic Chemist, United States Bureau of Standards, Department of Ceramics

Contributing Editors: Prof. Charles F. Binns, Ellis Lovejoy, C. E., Anton Vogt, C. E.

AMONG the various forms of silica found in nature, one of the purest is the water-clear crystals of quartz which occur in several localities. This quartz is seldom used in this country (Canada), says the Canadian "Clayworker," as the gannister rock is much more easily pulverized and is generally regarded as more suitable, notwithstanding the fact that it is far less pure. Moreover, all samples of quartz are not suitable for the manufacture of firebricks, quite apart from their purity or chemical composition. Some varieties of quartz, for instance, become porous and "dead" when burned, others expand excessively and produce brittle brick which are particularly liable to spall and scale. Still others appear to be fairly pure, but have too low a melting point, *i. e.,* under 1,730 degrees C.

A good quartz is characterized by a high fusing point and by a very trifling increase in volume on repeated and prolonged heating to bright redness. The precise proportion of silica present is no criterion of the quality of the quartz. The precise form of the material is of secondary importance, thus quartz and quartzite are equally suitable (with the exception of certain varieties), though the smaller crystals of quartzite produce a material which is easier to manipulate on account of its smaller resistance to the action of the grinding mills.

As both good and bad quartz and quartzites occur in the same localities, the geological formation is not necessarily any guide to the quality or suitability of the material. The texture and color when the samples are examined with an ordinary pocket lens are equally unreliable. The use of the microscope, on the contrary, gives a rapid and certain means of distinguishing between useful and useless silica, so far as the manufacture of firebricks is concerned. In polarised light, the useless material shows a clear field in which each of the particles of quartz lie closely packed but without any matrix or binding material, whereas in all the useful silica rocks the quartz grains are all separate from each other, and are embedded in an opaque matrix of a basaltic character and termed by Wernicke, who has investigated this problem very thoroughly, a basaltic cement.

In order to get good results some skill is necessary in preparing the thin sections of rock by carefully grinding a specimen down until it is thin enough to present a flat field under the microscope and to appear quite transparent in the transparent portions. Some practice is also required in the case of certain quartzites to recognize the basaltic cement.

It is unusual to burn the raw rock, but Lange has advised this procedure as facilitating the grinding so much as to make it cheaper to burn the rock, quench it, and then finish the grinding than it is to grind the freshly dug material.

If ganister be used, the clay present acts as a binding material, but its presence is by no means an unmixed blessing. More refractory bricks have been made in Germany by Lange, who pressed the powdered rock at 30 atmos, or 426 pounds per square inch, into brick.

It is common on the Continent to speak of all silica firebricks as "Dinas" brick. This is a serious misnomer, and a German contemporary is adopting a wise course in suggesting that this term should only be applied to bricks actually imported from the vale of Neath in Wales, and whence the original "Dinas" brick were exported, and that for similar brick from other localities, the term "silica brick" should be used.

There is a widespread impression that because silica bricks are made of a single oxide (silica) that their manufacture is as easy as, or even easier than that of firebricks made of clay. This is far from being the case, and there is a large field for further research work on the manufacture of bricks composed of almost pure silica.

Raw Lead Color Glazes.

The following raw lead glazes have been developed by Dr. A. Berge of the Royal Ceramic School, Bunzlan, Ger.

No. I The glaze given below has proved very satisfactory when applied to earthenwalre.

Lead monoxide	200.8 parts
Feldspar	55.6 parts
Flint	54.0 parts

This glaze matures to a beautiful glossy surface and when combined with metallic oxides develops beautiful dark colors. With 8-10% titanium oxide, a pleasing matt surface results. Excellent dark color hues with metallic lustre are obtained by the addition of the following:

(a)	Copper oxide	7.5%
	Manganese dioxide	7.5%
(b)	Copper oxide	6 %
	Manganese dioxide	3 %
	Cobalt oxide	5 %
(c)	Manganese dioxide	3 %
	Cobalt oxide	3 %

No. II

Small star-shaped crystals are produced in the following glaze by the addition of 6% manganese dioxide and 0.6% chromium hydroxide.

Lead monoxide	211.8 parts
Feldspar	27.8 parts
Flint	60.0 parts

An addition of 2% copper oxide together with 8% zinc oxide and 3% antimonyoxide produces a pleasing green color.

No. III

A deep black was obtained in the glaze given below by an addition of 2% uranium oxide with 4% cobalt oxide.

Lead monoxide	223.0 parts
Kaolin	23.2 parts
Flint	109.2 parts

No. IV

A dark shimmering red was produced in the following glaze by an addition of 20% chrome tin pink.

Lead monoxide	200.7 parts
Feldspar	55.6 parts
Flint	84.0 parts

An addition of 4% uranium oxide produced a yellowish red color; 3% antimony oxide produced a deep yellow, while a dark reddish brown was obtained by the addition of 3% manganese dioxide. A semi matt, dark green in color was produced by 8% titanium oxide with 2% copper oxide.

No. V

The following glaze matured to a grayish green color, with a crystalline appearance, by an addition of 3.5% uranium oxide and 2% nickel carbonate.

Lead monoxide	178.4 parts
Feldspar	111.2 parts
Flint	48.0 parts

No. VI

The following glaze given by Cramer, proved very satisfactory for stoneware purposes.

Lead monoxide	223.0 parts
Kaolin	64.5 parts
Flint	90.0 parts

Following a normal burn, this glaze is only very slightly attacked by a 4% acetic acid solution. An addition of only 4% tin oxide makes the glaze opaque.

No. VII

A very pleasing semi-matt glaze is obtained with the following formula:

Lead monoxide	178.4 parts
Whiting	15.0 parts
Feldspar	27.8 parts
Flint	102.0 parts

Satisfactory colors are produced in this glaze by the addition of the following:

(a) 8% titanium oxide
2% zinc oxide ....yellowish gray
(b) 0.4% cobalt oxide
1.2% manganese dioxide ....dark violet
2.0% chrome tin pink
(c) 4.0% ferric oxide
0.6% cobalt oxide...................greenish brown
(d) 8% titanium oxide
2% zinc oxide ....gray matt.
1% cobalt oxide
(e) 8% titanium oxide
2% zinc oxide ....yellowish brown matt
1% ferric oxide
(f) 8% titanium oxide
2% zinc oxide ....dark brown matt, mottled
0.6% manganese dioxide

No. VIII

A rose red color was produced in the following glaze by an addition of 20% chrome tin pink.

Lead monoxide	200.7 parts
Magnesite	8.4 parts
Kaolin	38.7 parts
Flint	132.0 parts

No. IX

Rather remarkable color effects were obtained with the following glaze.

Lead monoxide	189.6 parts
Feldspar	55.6 parts
Kaolin	38.7 parts
Flint	48.0 parts
Whiting	6.0 parts

An addition of 10% ferric oxide produced an unusual opaque glaze, deep red in color.

No. X

A glaze of the formula given below produced a beautiful sap green color with 2% copper oxide.

Lead monoxide	176.2 parts
Feldspar	77.0 parts
Barium carbonate	13.8 parts
Flint	87.6 parts

To obtain satisfactory results as regards color, all the above glazes should be fired in a muffle and it should be stated that trouble would be experienced with crazing.

FATE COMPANY INTRODUCES NEW MACHINES.

Dry Pans, Automatic Cutting Tables and a Special Paving Brick Table in List.

Among the new things that the J. D. Fate Company have gotten ready for the market recently are a new 9-foot dry pan, and a new type of automatic cutting table. The former has many items or valuable features to it, that they bring out quite strongly in their advertising elsewhere in this issue. These features all tend toward saving time and wear, and also toward a more rigid and stronger pan throughout.

The special cutting table is one designed to overcome some possible difficulties that a few clayworkers have experienced, especially with their tender clays. The boards or plattens on which the hollow ware is cut are tilted, thus raising one corner and resulting in a shear cut, which prevents practically any breaking down of the partitions or walls of the same. In addition the Fates have equipped this with a friction attachment on the reel, and also a cam arrangement on each cutter arm, thus avoiding any jar that might result in a curve cut.

The J. D. Fate Company reports business to be quite good at this season of the year, and among some of the recent orders taken and shipments made are the following:

Special Premier Machine with dies for hollow ware to the Western Brick Company, Danville, Ill.

Imperial Machine with complete outfit to the Pittsburg Tile Mfg. Co., East Liverpool, Ohio.

Complete order from the Valley City Brick Co., Valley City, N. Dak.

Hummer Machine and other items to the Armstrong Bros., Fletcher, Ont.

Double Pug Shaft Machines for pottery pug mills to the following companies:

J. B. Owens Floor Tile Co., Zanesville, O.
G. R. Thomas Co., East Liverpool, O.
Great Western Pottery Co., Tiffin, O.

Special Premier machine and table to the Bessemer Fire Brick Co., Birmingham, Ala.

Equipment for roofing tile manufacture to the Provincial Government of Ontario.

Special Hollow Ware Table to the Pacific Face Brick Co., Portland, Ore.

Special Large Gear Driven Disintegrator to Johnston Bros., Clay Works, Ia.

Special Revolving Table for cutting fire brick, to the Ostrander Fire Brick Co., Troy, N. Y.

The Fate company also reports some nice business on both their dry and damp clay feeders, that seem to be meeting a popular demand. It also is getting ready for the market a special automatic brick table to work in connection with a new paving brick die that is being put out by the Louisville Machine Co., Louisville, Ohio. The combination of this table and die is designed to do away with the repressing of paving brick, because all of the points obtained by repressing are gotten in this way. In addition a lug is molded on the brick and round corners are secured on both the ends and sides. Tests have been made with a large variety of different clays and all who have seen the brick made and tested are very enthusiastic over it.

Questions and Answers

A Department for the Solution of the Knotty Problems Confronting the Clay Worker

This department was inaugurated to be of material benefit to the readers of "Brick and Clay Record" and no charge is made for the service given. The advice of the world's recognized authorities in ceramics is offered to clayworkers who are invited to avail themselves of the opportunity to have their problems solved here. Should a reply be desired by letter enclose a stamped and addressed envelope for reply.

Insufficient Drying Causes Poor Burns.

214. *New Jersey—We have lots of trouble with our burns. We use scoved kilns, such as are used in the Hudson river district and our clay is dredged out of meadow land and consequently is quite wet. We allow this to dry about two months before using it. We dry the manufactured brick about 35 hours before heating up the kilns. We might add that our clay is mixed with coal dust—about four-fifths of a bushel per thousand brick. We burn under the steam and when we get good brick they are hard and strong. The writer's impression is that the heat is unevenly distributed. We have hard burned brick in places, some "swelled brick," and often pale brick in the same arch. We burn from 15 to to 20 arches.*

It appears to be a case of insufficient drying, although there are other contributing causes and our friend tells the source of the difficulty when he says his clay is "very wet" and must be "dried two months" before using. Your clay evidently does not give up to moisture as readily as lots in the Haverstraw district and, in advancing the fires to follow up the steam, there may be many parts of the kiln not quite ready for this advancing. Examine your brick carefully for these moisture spots and as long as moisture remains in them the temperature at the spot where this moisture exists, is kept down. Naturally this particular spot is slower than the sections which are better dried. The hotter brick surrounding these slower spots, causes a too rapid advance in temperature and prevents complete oxidation. Bloating results.

The unequal heat also may be due to bad setting, but we do not believe it is.

The soft pockets mentioned give additional evidence for the belief that the trouble is in the insufficient or irregular drying. These brick are cold and the heat naturally draws to the hotter spots surrounding them.

Have you ever considered that possibly your clay is not adaptable to the Haverstraw method of burning under the steam? None of the western clays would stand this treatment, although the Hudson river plants find it the best practice.

Summing up the proposition we would say that your difficulties are due to the following causes:

First—Irregular or insufficient drying, which may be due to the differences in the clay.

Second—Improper setting—that is for the sort of clay you have.

Third—The wrong method of burning—the Hudson river system not being just the right method for your clay.

Color Varies in Burning.

215. *Tennessee—My clay does not produce the same color every time. We keep the conditions as near the same at all times, but in the same kiln one burn may produce a variation of colors. Can you suggest a remedy?*

The correspondent does not tell us very much about the clay or any of the conditions. On page 806, Oct. 21 issue of this journal, 171 Michigan asks a similar question. If your conditions are anything like his, perhaps you will find a remedy in the answer given there.

Wants Practical Engineer.

205. *North Carolina—Please give me information as to who is the best practical engineer that I can get to examine some property with a view to purchasing it. I want to get the best man that can be got, and want to be sure that he is a good, practical man.*

This is asking us rather a hard question. Ceramist engineers—like the Irishman's whiskey—are all good. There may be some, under certain conditions, that might be better than others, but who can say what those conditions are until a ceramist has made an exhaustive investigation? In the advertising pages of this journal there appear the advertisements of a number of engineers—any one of whom would answer all of our North Carolina friend's requirements. The fact that their names appear in these pages assures our readers that we have found them to be practical men and, in every way, believe they are to be trusted. Then, too, most of the machinery manufacturers maintain engineering departments and any of these are competent to handle our correspondent's problem. Look over the advertising pages and select the advertiser who impresses you most. You will not make a mistake with any one of them.

Alumina Reduction Plants.

190. *Pennsylvania—Will you kindly give me the address of 190 Pennsylvania in your issue of Oct. 21, who seeks the name of some alumina reduction plant? I enclose stamped envelope for reply.*

We have done as correspondent requested. Likewise another reader who asks the same information has been supplied with the address of 190 Pennsylvania.

Wants Books on Manufacturing.

219. *Minnesota—Please send me a copy of your paper and also a list of books that teach the brick-making business from A. to Z. I have coal property in the west, with plenty of coal, shale and clays, water and transportation facilities, and think it would make an ideal place for a plant there. There would be a great advantage in freight rates and a good market, and I know but little about the business, so I want to learn.*

We have sent our friend a copy of our magazine as requested and also referred him to "Seger's Collected Works," "Modern Brickmaking," and other books of a similar nature listed by our book department. Our advice to the Minnesota correspondent is to obtain the services of some competent engineer, a number of whom are listed in our advertising pages and be guided by his advice. It may be that while the "excellent shale and clays" he has, may "make brick," they might not make a merchantable brick. It would be desirable to know this if it is true. It also is possible that while his material will make brick, it might better make hollow tile, paving block or some other product—that is, a more desirable and profitable product. Only a careful analysis will determine these facts. The services of a reliable ceramist engineer is not only desirable and profitable for the reason mentioned, but in laying out a plant that will give the greatest manufacturing efficiency.

Efflorescence—Here it is Again.

216. *Montana—I have had lots of trouble in my burning, the first lot I burned cracking in the kiln. I have read faithfully every issue of "Brick and Clay Record" since I became a subscriber and find it has solved many of my problems. For instance, the cracking was cured by an article I read which gave me the conclusion that I needed more time to the burn and to mix a little sand in my clay. This we did and the results were fine. We got a perfect brick of an extra good color and I thought my troubles were at an end. I find now, however, that they are just beginning, which proves that clay is one of the most uncertain things in life. For instance, when the brick are laid up in the wall and they get a good soaking the water seems to bring out a limey substance—probably from the plaster or the mortar. It is hurting the sale of my brick.*

And yet our friend says he "reads every number of 'Brick and Clay Record,'" Surely, if he has, he must have seen the same question answered scores of times the past few months alone. We refer our correspondent to answers given in this department in the Oct. 21 and Nov. 4 issues. We also refer him to the exhaustive treatment of the same subject in another page of this issue, by Prof. Charles Binns, and Ellis Lovejoy has a very interesting book on the same subject. It is entitled, "Scumming and Efflorescence," and is listed by our book department at 50 cents a copy postpaid.

Anent Red-Burning Sand.

176. *Colorado—With reference to Inquiry 176, Colorado, in your Oct. 21 issue, we would be glad if you would refer the parties who are in the market for red-burning sand to Messrs. C. W. and W. S. Taylor, of Sandusky, Ohio. We have been using their sand for several years and it gives us perfect satisfaction.*

The writer of the above is W. T. Dumbleton, general manager of the Marion Brick Works, Montezuma, Ind., and our Colorado friend undoubtedly will appreciate the kindly interest shown in his requirements. This co-operative spirit on the part of our readers is one of the best of signs and one that should be encouraged. Help your fellow clayworkers, even if you have to exert yourself a little—it pays.

Wants to Fight Concrete.

221. *Texas—A new courthouse is to be built here in the next month or so and the commissioners are contemplating using concrete in its construction. It is our intention to wage a fight against it through a series of advertisements in our local daily paper and we would appreciate it very much if you have any clippings regarding concrete failure or any other literature on this subject to advise us and we will run the same in our advertisements.*

The article on "Re-inforced Brick Walls Cheaper Than Concrete," which appeared in the Sept. 15 issue of this journal will give our friend some very excellent material for his ads. The great value of this article is that it presents actual construction facts with comparative costs. We are sending our Texas friend also a copy of the "Life of Portland Cement" and some other data from our free service department and trust he will find just what he wants. McCreery Bros., Abilene, Texas, is the name of this inquirer and we suggest any of our readers who has data or clippings of concrete failures to mail them to this concern at once and a little co-operation like this may turn a concrete job into one for imperishable burned clay.

The White Clay for Paper Making.

172. *Ohio—The National Sales Co., Cincinnati; Charles F. Goodwin, East Liverpool, Ohio, and Roessler-Hasslocher Chemical Co., New York, each ask for the address of our Ohio subscriber who uncovered a fine deposit of clay which he believes, from a recent article in this magazine, to be adaptable to papermaking.*

Our correspondent, Ohio, 172, who sought the advice of this department in the Oct. 21 issue, has discovered that there are many in this land who have use for just what he has. Several have asked for Ohio's address and these inquiries have been forwarded to our correspondent, who appreciated our good offices enough to write and thank us and further offer to pay for the service rendered. We wish to say here that the service given in this department cannot be bought at any price, unless the $2 yearly subscription which our readers pay, may be considered as a charge, and that would be manifestly unfair to the other good features of the magazine.

Wants to Know How to Make Pavers.

217. *California—I wish you would inform me as to any literature that has been printed regarding the making of paving brick or refer me to a firm from which I may obtain such literature.*

There is no book devoted entirely to this subject—or at least none known to us, and we believe we are in a position to have such facts. "Seger's Collected Works," and "Searles' Modern Brickmaking," both listed by our book department, take up this subject in a fairly comprehensive manner, just as they do the manufacture of face brick, common brick or any other burned clay product. In the absence of any other literature devoted exclusively to the subject we advise the purchase of either one of these books.

Wants Addresses.

203. *Michigan—Enclosed please find letter to 203 Michigan who was complaining of labor conditions in your Oct. 21 issue. Will you please forward my letter to your correspondent?*

We have complied with our correspondent's request. This same correspondent also sends a letter to be forwarded to 177 Pennslyvania who in the same issue wanted to get rid of a scum on his brick.

222. *Texas—Please furnish us with a list of the enamel brick plants.*

The following plants are all we have a record of: Hydraulic-Press Brick Co., St. Louis, Mo.; American Enameled Brick & Tile Co., South River, N. J.; Andrew Ramsey, Mt. Savage, Md.; Tiffany Enameled Brick Co., Momence, Ill.; Sayre & Fisher Co., Sayreville, N. J.; Gladding McBean Co., Lincoln, Cal. For fear there are others we give the name and address of the inquirer: The Vandaveer Clay Products Co., 811 Franklin Ave., Houston, Texas. This case further emphasizes the statement made elsewhere in this issue that information should be given us for use in just such instances here recorded. Despite frequent appeals to our subscribers to fill in printed blanks we have never been able to get the information necessary for a classification of the various manufacturers. Quite often we are asked by some clayworkers for the name of all manufacturers in a certain line but are unable to supply him with any sort of accurate list. We take occasion here to refer to the blank coupon elsewhere in this magazine and ask every clay worker to fill it out.

203. *Michigan—We note in your Oct. 21 issue, that one of our readers is having trouble with his labor. We refer to Inquiry 203 Michigan. We have on our staff a ceramic expert who has had quite a number of years' experience overcoming such difficulties as your subscriber mentioned. Perhaps we may be of service to him. Will you give us his name and address?*

The desired information was sent out in our last service bulletin.

As to Bond Issues.

211. *Missouri—Regarding 211 Missouri in the Nov. 4 issue who wants to bond his plant, will say that quite a number of plants carry a bonded indebtedness and, if they have a good business and show a profit, or even show that with additional capital it could be made profitable, they can bond the plant and raise the money for improvements, also for taking up other indebtedness and for a working capital. This is what the Woodland Clay Co., of Woodland, Ill., did and they successfully placed the bonds. If you will send to G. W. Anderson, Jr., president of the above company, and ask for one of his bond issues circulars, it will be a good thing to send this to your inquiring friend in Missouri.*

This letter from W. C. Kirkpatrick, 316 Chamber of Commerce Bldg., Chicago, is here referred to our Missouri correspondent and undoubtedly will be of value not only to him but also to others who may be interested. We might add that elsewhere in this issue there is a news item in the "With the Clay Plants" department, which says that the Woodland Clay Company has contracted with Astrid Rosing, dealer, Chicago, for its entire output of Wyco tile, which shows that proper financing has a perceptible influence on a clay plant as well as any other legitimate business.

Says He Can Help Pennsylvania Reader.

177. *Pennsylvania—I observe in the Oct. 21 issue that a Pennsylvania reader is having trouble with whitewash. I can help him. Will you please give me his address?*

We have complied with the request of our correspondent who hails from Georgia. This case is illustrative of the wide-reading influence this department has. Who says the spirit of co-operative effort does not permeate the air?

Is Interested in Silos.

223. *Washington—We are very much interested in the article on Clay Silos which appeared in your issue of Oct. 21, as we are brickmakers as well as farmers. We have two brick silos on our farm and intend to advocate their use. Please send us extra copies of the Oct. 21 magazine and also a copy of the "Bungalow Book," for which we enclose check.*

The article our Washington state reader refers to has stirred up considerable interest throughout the country and has awakened more than one clayworker to the possibilities of this new field of endeavor. We have sent the copies asked for and also wrote our friend that the same article appears in a reprinted pamphlet which will be sold at cost to all who wish to use it in an educational campaign. The name of the purchaser can be printed on the cover for a nominal charge.

Correcting Point in Analysis.

190. *Pennsylvania—In the question published in your October 21 issue, under title "Wants Addresses of Alumina Reduction Plants" you made a mistake in stating that our clay contained 8 per cent of lime. It should have been .8 (eight-tenths of one per cent). If you will be good enocgh to correct this, we will be very grateful.*

"Brick & Clay Record" has received a number of replies to the item mentioned above, the error in the amount of lime content not having any effect upon the number of people interested. Among these is a letter from Massachusetts, from a concern which makes stove linings and fire brick. The address of the original correspondent has been sent the concern in the East.

Silica Sand for Refractories.

228. *Missouri—We are producing a flint silica sand that is being used by several brick manufacturers, in the kilns, to prevent the brick's sticking in burning. Tests made by experts to ascertain the fusing point exhausted the capacity of the test furnace, 2,900 degrees F., without even reaching the incipient fusing point. We can supply this sand in any fineness from 200 mesh up. Can you ascertain for us whether it is adaptable for the manufacture of fire brick or material of that nature?*

Manufacturers of refractories will confer a favor upon "Brick & Clay Record" by answering the question propounded by this correspondent. Is there a wide market for sand of this character and for the purpose suggested?

Seeks Facts About Concrete Tile.

218. *Ontario—Have you anything official pertaining to the life of cement tile, also the relative strength of clay and cement tile? If so, is it in pamphlet form? What we are after is something official to give to one of our local officers.*

We publish a small pamphlet, "The Life of Portland Cement," which has been sold to clayworkers at cost price for distribution in their own localities, and while this is not "official" it has been used to advantage by brickmakers who wished to "turn the tide" in their favor. The Iowa State Agricultural College has issued several bulletins on the subject of concrete and we suggest you write for copies. We have no knowledge of any government report. A copy of "The Life of Portland Cement" has been sent you. We might add that in our Dec. 2 or Dec. 16 issue we expect to print some interesting stories of failures in concrete.

Burners Neglect Night Fires.

229. *New York.—I find my kilns are neglected at night. I have shifted burners but fail to improve conditions. A recording draft gauge tells me next morning, of course, what has happened, but this is too late. Do you know of some device that will warn me when the firing is neglected or pushed too rapidly?*

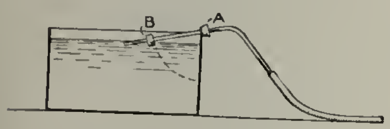
We know of no device that will meet your requirements. There are alarms which the burner turns in just as a policewatchman does, but this never proves that he is awake and does not insure he was attending to business. One ingenious night burner even proved that this system is worthless to give a check on his wakefulness, for he devised a means whereby the alarm was worked automatically at regular intervals. Various electrical contact arrangements have been devised in which the indicator of the gauge made electrical contact with a delicate spring as soon as a previously arranged limit of draft was reached. These, however, never have been shown to be satisfactory, the gauge being strained by the resistance of the spring and the pressure needed to make a good contact.

The Superintendent

A Department Conducted for the Interchange of Ideas in Methods of Manufacture

Contributions from our readers are solicited for this department on any subject pertaining to the manufacturing end of the industry. Short cuts and labor-saving suggestions are particularly sought. [Address all communications to the Editor of the Superintendent Department. Brick and Clay Record, Chicago.

SOME clayworkers, particularly those using kaolin or finer clays in their products, may find the following device—a home-made siphon—of advantage in washing their material. By this siphon the liquid may be drawn off from the surface without disturbing the finer particles of the clay which have dropped to the bottom of the vat with the rest of the heavy residue or clear kaolin. The siphon consists of two rubber corks and a glass tube with a rubber hose connected to it. The cork A is used as a bearing and support on the edge of the tank. The position of the cork B on the tube determines the distance that the mouth of the tube will be under the surface of the liquid, also to some extent the sensitiveness of the apparatus. However, the principle of the device is the buoyant effect of the water and the lever action of the rubber tube which is attached.



Narrow Pulleys Poor Economy.

Pulleys with insufficient breadth of face do not give fullest transmission efficiency. Usually the diameter of a pulley is given correctly, in accordance with the work they are called upon to do, but the breadth of the face is overlooked and the width of the belt is correspondingly small. As the power transmitted by a belt depends largely on its width, it can be seen that we are not getting all the power the diameter of the pulley leads one to expect. A narrow belt is poor economy.

Mica in Clay Causes Blisters.

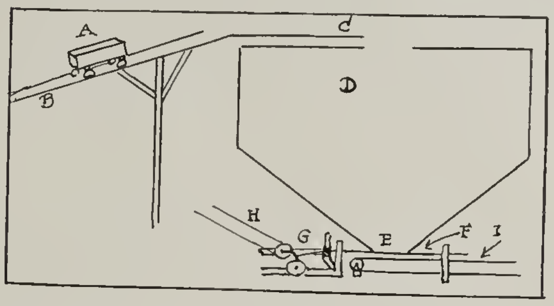
Large drain tile show blisters even before they go into the kiln. This is due quite often to the presence of mica in the clay. Mica is greasy and slippery and fails to unite properly with the clay. Blisters form at these places. While burning they open up. An extension on the tile press, between the clay cylinder and the die, permits the clay to travel further, giving it the time to unite before issuing from the die. This, as a rule, overcomes blister trouble. A 10 per cent addition of sand rock to the clay helps quite often, also.

Using Slag in Vitrified Ware.

The addition of finely ground blast-furnace slag to an ordinary clay of moderate fatness is said to be a simple means of producing an excellent vitrified ware suitable for stoneware and paving brick and tile. The slag, being in the form of a ready-made frit, acts as a very energetic flux, and one which is not damaged by prolonged storage. The iron compounds and other coloring agents in the slag are not usually objectionable, as the color they produce is an agreeable gray. The slag must be ground very fine as the particles are somewhat sharp and may form unpleasant specks if insufficiently ground. If the slag is bought in a coarse condition it should be crushed in stonebreakers, followed by a ball mill.

THIS IDEA WINS $5 PRIZE

Contributor who signs himself "H. W. D." is awarded the $5 prize for the best idea submitted to this department for this issue in accordance with the contest announcement in the Nov. 4 number. We pay $1 for every idea worth while printing in every issue and $5 for the best. Here is the prize idea this issue:

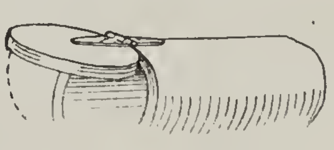


We needed a system of storing our clay from the pit to avoid shutdowns in wet weather. We solved the problem with the following home-made device suggested by a reader recently in "Brick & Clay Record:" A loaded car (A) dumps the clay at C into the bin (D). The clay falls by gravity on the oscillating and slotted bottom (E) and through this onto the conveyor belt (F) and is then carried to the dry pan. The oscillator (G) is worked by the belt (H) and can be started or stopped at will.

Have you a better idea? Send it in. It may help a fellow clayworker and at the same time win the $5 prize. You are sure at least of getting $1 for your trouble. Address: Superintendent Department, "Brick & Clay Record," Chicago.

Tile-Outlet Cover.

A great deal of trouble is caused by small animals entering the tile at the outlet of drainage systems where they are apt to get stuck in the narrow opening and stop the flow of water. It is very difficult to locate the point of obstruction and much expense is often incurred in finding it. The trouble may be prevented very easily by attaching a wood frame over the outlet and hinging a wood door to it at the upper edge. This door will be held open by the outflowing water and, while not obstructing the flow, prevent any animal from entering. When there is no flow of water the door covers the outlet completely.



This Hinged Cover Does Not Interfere with the Passage of Water.

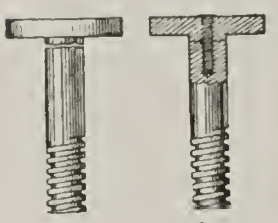
The Strength of Pulleys.

As a result of a series of exhaustive tests made at Purdue University for determining the breaking strength and principal points of weakness in pulleys of different materials, the following important conclusions were reached: Rim joints midway between the arms are serious defects and materially lower the speed at which it is safe to run the pulley; the paper wheel with solid web and rim will safely withstand a peripheral speed of as much as 106 ft. per second;

wood pulleys with solid rims have an ample factor of safety at a peripheral speed of 90 ft. per second, if the wood is of good quality; steel wheels of the split-rim type are unsafe at greater peripheral speeds than 80 ft. per second.

Temporary Repair on a Broken Valve Spindle.

The breaking of a brass valve spindle is of no uncommon occurrence and the break invariably takes place at or near the top of the shoulder that secures the valve seat, or disk, to the spindle.



Center the Pieces Pieces and Drill and Drill Hole.

When such a break happens on a piece of machinery far from a repair shop the repair can be made on the spot, as taps and drills of some kind are almost invariably to be found in the engine room, and with these tools it is a simple matter to temporarily repair the spindles. File off the lower end of the broken spindle squarely and remove the part remaining on the shoulder plate. Center the two pieces and drill a hole, for the size of tap to be used, through the plate and a short distance into the spindle. Tap both holes and connect the parts with the threaded end of a common machine bolt, and cut it off to allow sufficient end for beading over a small portion against the shoulder plate. This method will often permit a valve to give efficient service until a new spindle can be made.

An Emery Shaker.

A well-cleaned talcum-powder can makes a good receptacle for flour of emery.

Salt for Glazing Tile.

Any sort of salt will produce a first class glaze on tile and sewer pipe, if the clay is in condition to take a glaze.

Keep the Lumps Small.

The grates in edge-runner mills for fire brick should have holes or slots not more than one-quarter inch in width, and for most purposes, one-eighth inch holes are best.

Clayfeeders Profit-Makers.

The installation of a clay feeder not only saves in labor but also makes a better product. One manufacturer guarantees a saving in labor alone of $500 per year. Experience teaches us this is no exaggeration.

Repairing a Worn Plunger.

A pitted or corroded plunger or rod may be repaired by cleaning out the corroded portions and filling them with solder, babbitt metal or block tin, a little higher than the surface of the rod. The uneven portions may then be filed or turned down in a lathe to a level with the surface of the rod. A brass rod can be repaired easier than one of iron, as the solder more readily adheres to it.

How to Make High Shrinkage Clay Normal.

According to Prof. A. V. Bleininger, clays which are difficult to dry because of their high shrinkage may be rendered normal by heating the raw clay, as it comes from the pit, in a rotary furnace at a temperature of 250 to 400 degrees C. This destroys part of the plasticity-forming power of the clay, and enables the material to be dried in the same manner as less plastic clays. The cost is very slight. The addition of sand, burned clay, or other non-plastic material also will convert many tender clays into those of normal strength. It does this by separating the particles and increasing the pore spaces. Mixing clays with boiling water instead of cold during the pugging or tempering has a similar effect, and, in addition causes the brick to harden slightly as they cool before entering the dryer.

When the Clay Sticks.

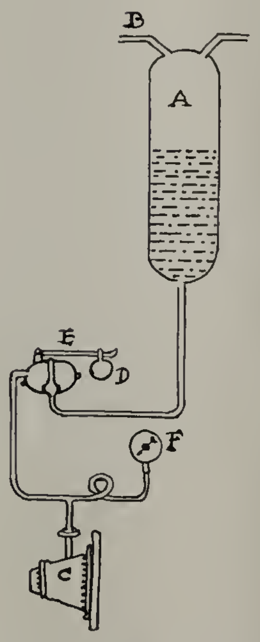
Do not make the mistake of deciding that more oil is necessary when the clay sticks in the press-box until you have ascertained whether it is caused by an incorrect stiffness of the clay or to the irregular working of the machine.

"Stuffing" Tile Unprofitable.

Drain tile manufacturers have learned that they can burn with practically no loss when the tile is set single and not "stuffed" with the small tile in the larger tile. Of course some clays, not quite so sensitive, can be treated in this manner and come out all right. As a rule, however, the larger tile will crack.

A Simple Pressure Regulator.

Many maintain that steam or water die lubrication is superior to oil. It is cheaper at least and steam especially has the advantage over oil in that it does not enter the surface indentations and corner cracks like oil which prevents these from healing later under pressure. Water is almost as satisfactory but requires considerable pressure which is not always to be had in small city water supply systems. A pressure cylinder, therefore, has to be used. A contributor suggests a simple device (see illustration) in which the tank (A) at top is filled with water and steam is blown in (B) to produce the necessary pressure at the die (C). By sliding the weight (D) to and fro along the regulator arm (E), any desired pressure between zero and that of the steam from the boiler can be obtained. A gauge (F) enables the pressure of the water to be regulated at will. The device is known commercially as "Stull's Pressure Regulator."

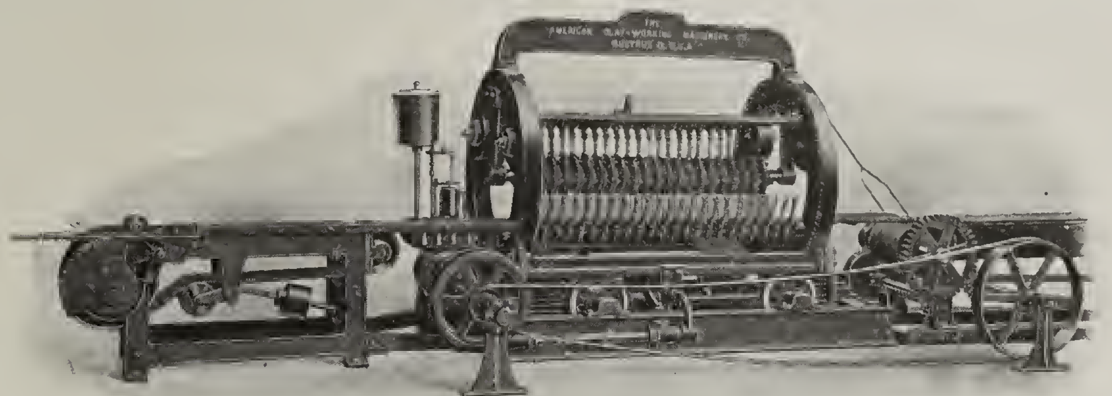


Firing a Kiln Automatically.

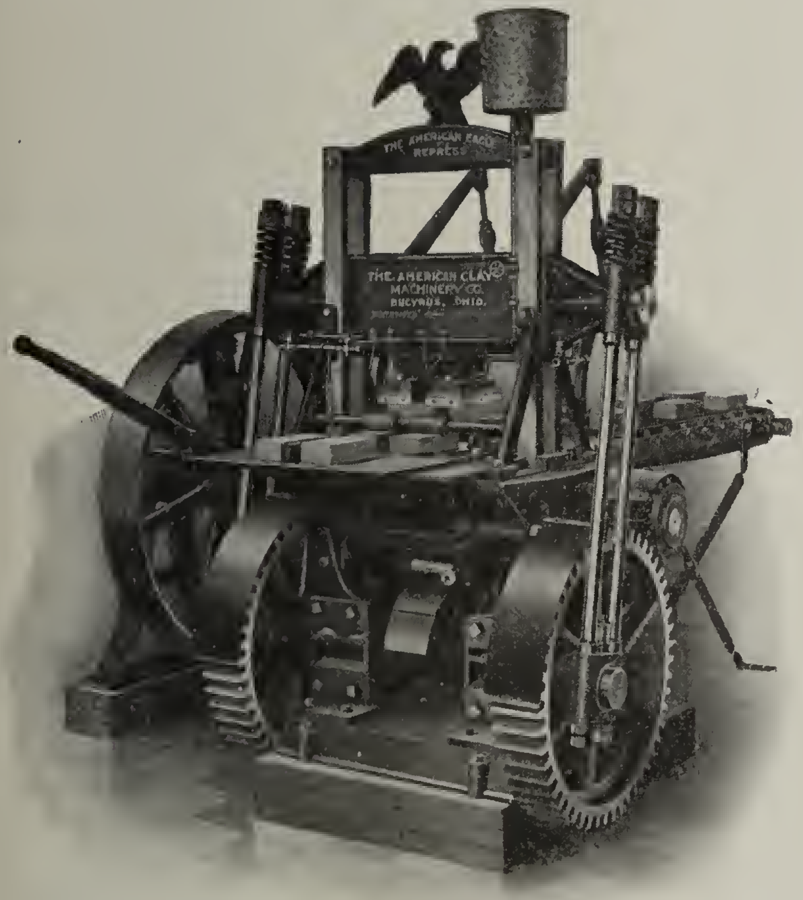
One of the greatest disadvantages of the burning of Portland cement, and the one which kept the industry back for many years, was the difficulty in getting the clinker burned uniformly. Exactly the same difficulty occurs in burning brick and tile, but the method which was found successful in the case of Portland cement cannot be applied to brick.

It is quite obvious to any thinking man who has any experience of brick and tile works, that the making of the brick produces large numbers of goods, all of which are exactly alike, that these brick or tile can be placed in the continuous kiln in a perfectly uniform manner, and that if some means could be found whereby the heating could be uniform throughout the kiln without the exercise of more skill on the part of the burner than is needed by the boys at the machine, or by the men engaged in setting, then the manufacture of brick and tile would be made almost per-

THE AMERICAN CLAY MACHINERY CO.
BUCYRUS, OHIO.



THE No. 20 Automatic Brick Cutter, here shown, has a record for satisfactory operation which will recommend it to any brick manufacturer who sees the wisdom of machinery quality. It is at once simple, accurate, steady and reliable. In capacity it is limited to the speed of the brick machine. The cut is made while the table is traveling with the bar of clay. The cut is regulated by the clay bar which insures the cutter being in proper time. In design and construction there is no cutter which can surpass the American No. 20. The principle is correct, the designing simple and effective and the building of the cutter is all that excellent material and competent workmen can insure. Our cutters are built by men whose daily business is the construction of only cutters. They are expert on cutter work and each completed machine is sure to be right after passing inspection and testing. We build various types of cutters for cutting all classes of clay products. We will be pleased to hear from you regarding any machinery or appliances.



THE Eagle Repress is a press of performance. Its daily operation in many plants is a record which is attainable by any manufacturer who is looking for actual performance rather than problematical promises. The simplicity of the Eagle Repress, its strength and ease of movement all combine to insure long and satisfactory service devoid of delays for repairs. The only time the Eagle waits is when it is waiting for the brick machine to furnish blocks. In building the Eagle we have used the best of material and have put it together with the care which makes for its dependability. Our Repress building crew has a pride in the work they are set to do. Every Eagle goes out with the confidence that it will make good. This confidence is based upon the design, material and construction all of which are right. For Paving Block and Face Brick the Eagle Repress will be found better, more faithful, and more continuously economical than any other press. We will be pleased to give you reference of satisfied users in your vicinity. We build other represses in different capacities and a full line of Clay Working machinery and appliances. For other descriptions see the American Clay Magazine published at Bucyrus, Ohio, and sent free to those interested in the clay trade.

The American Clay Machinery Co.
BUCYRUS, OHIO

BUILT RIGHT RUN RIGHT

fect—certainly as perfect as is the manufacture of cement at the present time.

Various patents have been taken out at different times for the automatic supply of coal to the feedholes of continuous kilns, but none of them have become very popular, one reason being that they all depend on somewhat complex mechanism for their work, and they are therefore easily put out of order. Some of the simpler devices consist of a hopper, which contains an internal wheel fitted with wide vanes, something like a water wheel. The coal is fed into the hopper, and as the wheel revolves very slowly, it passes a regular quantity into the kiln. In order to make the wheel revolve with sufficient slowness, some form of reducing gear is necessary, and it is in the introduction of this that the trouble begins.

One inventor endeavored to use a hopper in which the lower outlet was so small that the coal traveled through it at just the speed at which it was required by the fire; but this arrangement was always becoming choked and useless. Even the addition of a rapping hammer did not entirely overcome the difficulty. Moreover, it is necessary to adjust the speed so that the temperature inside the kiln may not rise too rapidly; this is exceedingly difficulty to do with an automatic apparatus. (Is it not possible that by the use of an automatic heat-registering device like the electric pyrometer, arranged to work in a similar manner to the thermostat in steam-heating systems, that this apparatus might be controlled and the heat regulated?—Editor "Brick and Clay Record.")

Most burners—particularly those engaged on night duty—are fond of putting a good charge of fuel on the fire and allowing this to burn through before putting on another. In this way they need only attend to the kiln about once an hour. This method of working is far from satisfactory, for it creates a very irregular series of rises in temperature. If the temperature, or draught of the kiln is measured by a continuously recording gauge, it is easy to see how extremely irregular these risings and fallings of temperature really are, and how detrimentally they must act on the goods being burned.

The only proper way to fire a continuous kiln—and fortunately it is also the easiest way—is to use a small shovel, with a blade about 8 ins. by 5 ins., and to put one small shovelful into each of the holes "under fire" every 15 or 20 minutes. To keep proper count of the time, the burner should have his own watch or a good clock should be provided for him on top of the kiln. It will usually be found that the more frequently the kiln is fired the more rapidly will the fire travel, and the greater will be the output. Indeed, much of the wonderful high speed work done by Buhrer kilns in different parts of the world is chiefly due to the "little and often" principle applied to the firing of the kiln.

If the kiln is thus fed at short, but regular, intervals, the nearest possible approach is reached to the ideal, that is, the absolutely uniform feeding of the kiln, for the addition of small quantities of fuel does not reduce the temperature suddenly, as larger doses do, and the greatly varying risings and fallings in the temperature do not occur.

That it will be a long time before the use of automatic contrivances for firing kilns become a success, is easy to understand. At present they need the burner to be present so as to see that nothing goes wrong; they lighten his work, but they do not dispense with his services. At the ends of continuous kilns they cannot be used with satisfaction, as the fire would travel too rapidly on the inside, and too slowly on the outside of the curved end of the kiln. Furthermore, on holidays and Sundays, the kiln must be worked differently so as to accommodate itself to the days when no work is done by the setters and drawers, but these variations are beyond the control of an automatic feeding device.

A really good automatic feeding device for kilns which is, at the same time, not too expensive, would be very welcome, and would overcome many difficulties now experienced when the burner is not fully alive to his work.—J. Seward in the Brick and Pottery Trade Journal (English).

Where Stiff-Mud Failures Occur.

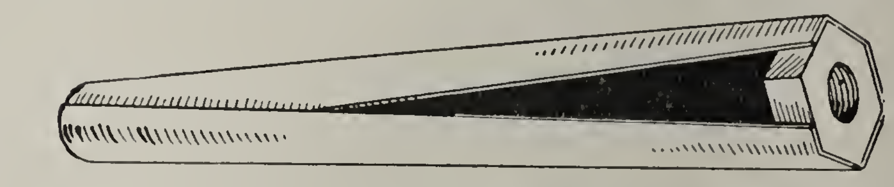
A great many of the failures in the working of the stiff mud process are due to the attempts to shorten the process of manufacture by omitting weathering, tempering, or pugging and drying.

Cause of Yellow Patches on Stoneware.

Yellow patches on stoneware are produced when the ware is heated by a flame that oxidizes too much, previous to the application of the salt in glazing. The fires burn too low and admit too much air, followed by a rapid salting before the ware has been reduced again. The remedy is in not allowing the fire to burn too low just before adding the salt .

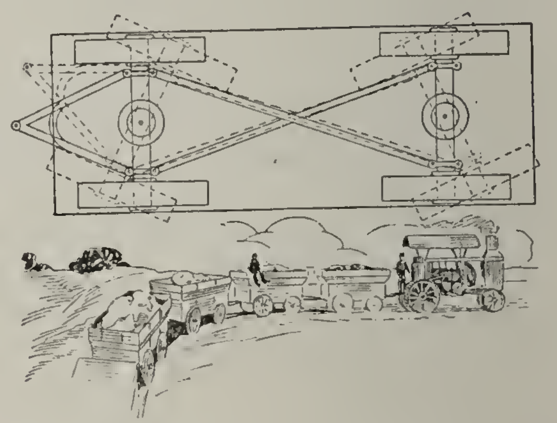
Starting Holder for a Nut.

The holder is made of sheet metal, rolled into a tube. A nut is then inserted in one end and the metal hammered to the shape of the nut. Any length of metal can be used, as desired. In use, the shaped end of the metal is slipped over a nut and a slight pressure on the other end will hold the nut so that it can be turned on the threads of a bolt in otherwise inaccessible places.



Motor Trains for Clay Pits.

Mechanism for steering the trailers of motor or traction trains, whereby one clay car is made to follow the one ahead in rounding curves, is shown in the accompanying diagram, and is suggested by a contributor as an economical clay haulage system. When the front wheels turn in one direction the rear wheels turn just as far in the other, by reason of the crossed rods connecting the front and rear axles. The means of connecting the rear axle of one car with the front axle of the car following is likewise shown.



ARE YOU LOOKING
for a real bargain in a second-hand machine?
Read the offers in the Classified Advertising pages.

White Trucks will Reduce Your Costs and Increase Your Profits

OF COURSE you are interested in means that will reduce your cost of doing business. Such results mean increased profits and give you an advantage in competition. White Trucks will reduce your hauling expense which you know is a big item in your costs. For example:

A White 5-ton Power Dumping Truck owned by the Akron Brick and Tile Company is actually earning $250 to $300 per month, figuring the work it performs at the regular cost of doing it with teams.

The Montowese Brick Co., New Haven, Conn., say: "Our White 5-ton truck does the work of three teams by our figures, at less expense."

Can you afford to overlook such an opportunity for saving in your business?

White Power Dumping Trucks

White Power Dumping Trucks are especially efficient for handling common brick, fireproofing, and similar materials which can be unloaded in this manner.

The White dumping mechanism is simple, swift in operation, is not cumbersome, elevates to a 47 degree angle which insures a perfect discharge of the most obstinate materials and, the complete dumping operation is performed in 30 seconds.

An investigation of these trucks will convince you that their use will not only provide the utmost "hauling" efficiency but will promote economy as well.

Send for Catalog

THE WHITE COMPANY
Manufacturers of Gasoline Motor Cars, Motor Trucks and Taxicabs
CLEVELAND, OHIO

The Dovenshire Brick Co's. Plant
Note the Shale Bank in the Background.

With the Clay Plants

A Department Wherein is Set Forth Factories Erected or Contemplated, Recent Incorporations, Improvements and Enlargements, and Any New Ideas That May Be of Benefit to Others

THERE are two things at least that should take the Dovonshire Brick Company of Dillonville, Ohio, out of the mediocre class, and those are the method it employs in feeding its dry pans and the fact that the main street of the city—paved with good hard-burned common brick—runs between the plant and the shale pit.

Of course there are other reasons why this concern is worthy of special attention, but the good judge of things ceramic must admit that these two items are sufficient.

The Dovonshire company has been in existence about nine years and was operated by local capitalists until about six months ago when the present organization, with A. S. Freeman, president, C. B. Crawford, treasurer, and George P. Wilson, secretary and general manager, took control. The plant was overhauled, new equipment bought and changes made in operation, $10,000 being expended before general manager Wilson felt satisfied he could make good clay products economically.

"A Good Hard Burned Common Brick Street Runs Between Plant and Shale Bed."

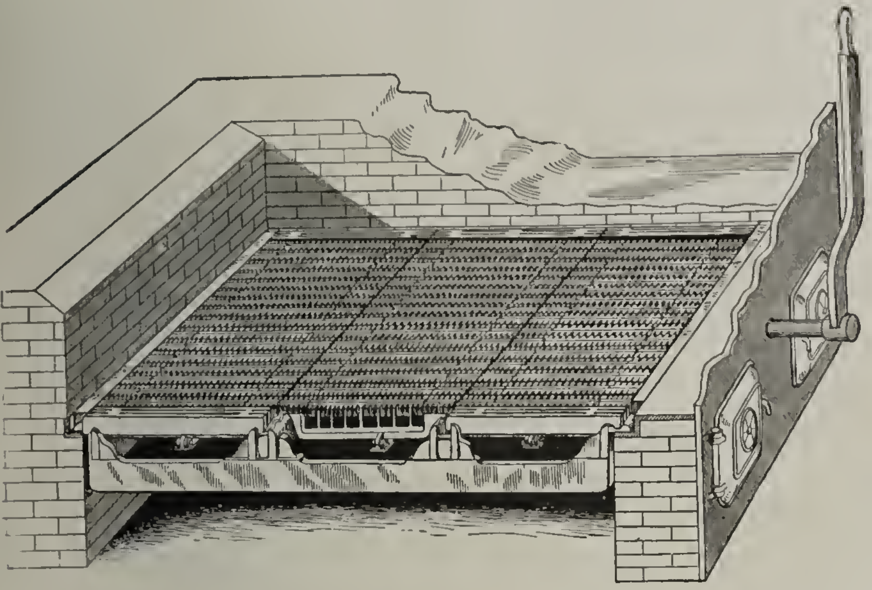
The present capacity of the plant is 25,000 to 30,000 brick, both common and face brick being the product. Mr. Wilson, however, says the plans are now under way to increase the output to 40,000 or 50,000 by early Spring.

The shale pit, as may be seen by reference to the pictures accompanying this article, is located directly west of the plant and across the main street of Dillonvale, which, as has been observed, is paved with hard-burned common brick and is said to be as good as any street ever constructed. This shale bank seen in the larger of the two pictures, takes in the entire hill shown in the back ground of the photograph and is about 100 ft. from the dry pans. This hill is from 75 to 200 ft. in height and is without stripping. It has a 9-ft. vein of fireclay, which is thoroughly mixed before being delivered to the dry pans. The shale is grey and red and sandy by nature.

The shale is loaded on the pit cars—home made at that—and these are run by gravity over the street to the foot of an incline across the way to the plant. The clay is then elevated and dumped into the bins. Means elevators are used.

From these bins the clay is run by gravity over screens of 2½-in. mesh, where the fine clay is taken out and run directly into the pans. The larger pieces are passed over the screens and run through a No. 4 Champion crusher, where they are passed into the dry pans.

It can be seen that by the use of the gravity conveyors



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Have Saved Money for These People

Why Not for You?

LEHIGH SEWER PIPE & TILE CO.
Fort Dodge, Iowa.

Martin Grate Co., Chicago, Ill.

Gentlemen:—The Martin Grates installed under our four 100 H. P. Hight Pressure Boilers are giving good satisfaction, and are wearing well.

We appreciate them very much over anything we have ever used before.

Very respectfully,
(Signed) W. U. Turpin, Mgr. Sales & Traffic.

NATIONAL FIRE PROOFING CO.
Hobart, Ind.

Martin Grate Co., Chicago, Ill.

Gentlemen:—Replying to yours of the 30th Ult., regarding our grates, will state that the grates you furnished us have been entirely satisfactory, very few repairs being necessary and I am sure it saves us a certain amount on coal bills.

Very truly yours,
(Signed) W. B. Owen, Supt.

LOGAN CLAY PRODUCT CO.
Logan, Ohio.

Martin Grate Co., Chicago, Ill.

Gentlemen:—In reply to your inquiry of the 12th inst., we find that the Martin Grates were purchased from you at the time we set our new boilers, and have been constantly in use for nearly three years.

We are pleased to advise you that they have given us entire satisfaction. Yours very truly,
THE LOGAN CLAY PRODUCT CO.

WINNIPEG SANDSTONE BRICK CO., LTD.
Winnipeg, Canada.

Inland Sales Company, 715 Somerset Building, City.

Dear Sirs:—In answer to your letter of the 17th inst., with reference to the two sets of Martin Anti-Friction Rocking Grates with which you supplied us, would say, these grates are giving us every satisfaction and we are well pleased with same, as they mean a saving of about thirty percent in our fuel bill.

Yours truly,
WINNIPEG SANDSTONE BRICK COMPANY, LTD.,
Per W. D. Macfarlane, Manager.

IRON CLAY BRICK CO.
Columbus, Ohio.

Martin Grate Co., Chicago, Ill.

Gentlemen:—In reply to your favor of the 4th, we beg to say that the Martin Grates installed in 1907 at our factory have proven eminently satisfactory. Our engineer is more than pleased. They seem to meet all of your claims.

They are not only labor and fuel savers, but permit us to burn a poorer quality of coal than we could do with the old style grates. They do not warp, and the indications after a year or more of use are that they will last many years.

Very truly yours,
(Signed) J. M. Adams, Gen. Mgr.

WABASH CLAY CO.
Veedersburg, Ind.

Martin Grate Co., Chicago, Ill.

Gentlemen:—Your grates have given us good satisfaction, just as we expected them to do when we specified them for our new Stirling Boilers.

Yours very truly,
(Signed) Wabash Clay Co.

HASTINGS BRICK WORKS.
Polenske, Schellak & Co.
Hastings, Neb.

Martin Grate Co., Chicago, Ill.

Gentlemen:—Regarding your grates, will say we installed them all right and find same satisfactory in every way and a fuel saver, and our Engineer says it saves him half of his labor of formerly. We remain, Yours truly,
(Signed) Polenske, Schellak & Co.

WISCONSIN BRICK COMPANY.

Martin Grate Co., Chicago, Ill.

Gentlemen:—Yours of the 13th received and replying will say we have used your grates for five or six years and have been well pleased with them.

Yours very truly,
WISCONSIN BRICK COMPANY.
(Signed) H. A. Smyth, Treas.

Among other satisfied users are: Richeson, Nelson & Moore, Greenville, O.; Woodburn Tile & Brick Works, Woodburn, Ind.

You owe it to yourself to at least investigate the merit of our claims. It costs you nothing; catalog and full information on request.

The Martin Grate Co.

347 S. Dearborn St., Chicago, Ill.

The Federal Clay Product Co.
Mineral City, Ohio
Fire Brick for Kiln Work Made a Specialty

ROBERT W. HUNT JNO. J. CONE JAS. C. HALLSTED D. W. McNAUGHER
ROBERT W. HUNT & CO., ENGINEERS
INSPECTION AND TESTS OF BRICK AND ALL CLAY PRODUCTS
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Announces that he has severed his connection with Harbison-Walker Refractories Co., where he has been in charge of their Engineering Department
General Engineering Work
SPECIAL ATTENTION TO MANUFACTURING PLANTS

C. & A. POTTS & CO.
Manufacturers of a Complete Line of Sand-Mould Brick Machinery
Write for our latest catalogue.
We can take care of your wants.
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Manganese Steel Castings
EDGAR ALLEN AMERICAN MANGANESE STEEL CO.
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PULSOMETERS
Cost less to purchase, install and operate than any other type of brickyard pump. They handle gritty water and never need lubrication.
Write today for our "Pulsometer Handbook." It shows many novel installations and contains valuable data on pumping problems.
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Chicago Office: 223-231 North Jefferson Street

COST-KEEPING
is being advocated by the organized Clay-Industry. As soon as you have found some of your burning costs exorbitant, send for a Frink Engineer with his
FRINK METHOD
THE FRINK PYROMETER CO.
LANCASTER, OHIO

and the method of handling the clay the labor of only one man is necessary, this employe taking care of two pans and the crusher.

The pans in use are Means 9-ft. heavy type. A Fate clay feeder and a new ground clay storage bin is now being installed, and with this additional equipment the handling of the clay will be still further improved.

The brick machine is the E. M. Freese Union machine and rotary cutter. The dryers are the waste heat type, on which has been installed an 8-ft. Massachusetts blower, a No. 20 vapor fan. There are six car tracks and double deck steel cars are used. The capacity of the dryer is 45,000 and requires from 24 to 30 hours.

The kilns are chiefly the round down-draft type and are connected by underground flues to the dryer pans. There are five of these round kilns, four 30 ft. and one 28 ft. There is also one rectangular kiln. The kilns are set 5 on 2, edge setting. The bottom of the kilns are spider type with solid floors.

The plant is located directly on the main line of the W. & L. E. R. R. and has connections with the L. S. & M. S.

Dillonvale is 17 miles from Wheeling, W. Va., and 20 miles from Steubenville, Ohio, and these cities are good markets for the products of the country. Dillonvale is about 2,000 population and being the business center of the No. 8 mining district, is a good market itself.

NEWS IN BRIEF

Burnham & Co., of Murphreesboro, Ark., will establish a clayworking plant at that place.

C. E. Bandisch has resigned his position with the Reiser (Tex.) Press Brick Company.

A loss that is approximated at $3,000 was caused by a fire that started Oct. 12 at the fire brick plant of Charles Taylor's Sons, 706 Burns street, Cincinnati, Ohio.

E. Danals, of Shawnee, Okla., has organized a stock company to take over ten acres of clayland in Jourdenton, Tex., for the purpose of manufacturing brick.

The Grand Ledge (Mich.) Brick Company is preparing to make about $15,000 worth of improvements to its plant, mainly consisting of three new kilns and an additional stack.

J. A. Drake, Bennetsville, S. C., is arranging to install a new brick and tile plant with a daily capacity of 50,000 brick, or tonnage equivalent.

Dr. L. S. Trusler, of Oakland City, Ind., wants information regarding clay gathering machinery, kilns and kiln bands, etc., pyrometers and aerial tramways.

The Basta Fire Clay & Shale Co., and Disney & Kincaid are said to be interested in a proposition that contemplates the erection of a clayworking plant at Clinton, Tenn.

J. W. McIntosh, W. J. Ralston and John Strand, of Monmouth, Ill., are negotiating with the township authorities of Colchester, Ill., to the end that a new stoneware pottery will be started in Colchester.

A. C. Ochs, of the A. C. Ochs Brick & Tile Company, of Springfield, Minn., writes that he is changing his large up-draft kilns to down-draft and making other improvements that will be completed by spring.

The J. M. Leach Manufacturing Company incorporated with an authorized capital stock of $200,000 in Kokomo, Ind., announces a purpose to manufacture brick. J. M. Leach, H. Leach and Mark Brown are the organizing directors.

A report is current in the real estate district in Beaver Falls, Pa., that some Pittsburgh, Pa., men have leased the coal and clay rights under the Harbison Hollow farms near Beaver Falls, and that a brick and tile plant will be built there. At this time it is impossible to learn of those identified with the proposition.

S. T. Bruce, president of the Midwest Clay Mfg. Company, of Wahoo, Neb., wants information and printed matter pertaining to two-wheel or four-wheel barrow trucks for handling pallets on dry-floor, on other forms of cars or trucks for same purpose, on dryers and on pallets and trays.

William L. Ryan, of 719 Catalpa street, Old Orchard, Mo., is at the head of a new company which has been formed under the name of the Dixey Brick & Clay Company, which will be located at Puryear, Tenn. The plant of this company has not been built, neither has an announcement been made of the line of products the company will manufacture.

The Terre Haute (Ind.) Chamber of Commerce is making a point of the fact that it has excellent coal and clay deposits near each other, each of which is practically inexhaustible. That the business opportunity in this natural condition was invited in when it knocked, is evident in the fact that Terre Haute concerns making brick give employment to 500 men, and one concern turns out 18,000,000 vitrified brick annually.

The United Roofing Tile Company will be the name of the consolidation of the interests of the United States Tile Company of Parkersburg, W. Va., and the Canton (Ohio) Roofing Tile Company, announcement of which consolidation was made recently in "Brick and Clay Record." The new concern will have a capital stock of $400,000. The company will enlarge its sales scope and is now prepared to do a much larger business than heretofore, when the concerns were operated indepentently.

Walter M. Pratt, proprietor of the Pioneer Brick & Tile Works at Earlville, Ill., was a visitor in this office one day last week. Mr. Pratt declares his output was far short of the demand in his territory the past season. He is very much interested in the "Open Price Policy" which several national and state organizations have adopted of late, and hopes to see the Illinois State Manufacturers' Association discuss the subject at its next convention.

Mrs. Townsend, wife of O. N. Townsend, president of the Townsend Paving Brick Company, Zanesville, Ohio, is gaining considerable distinction in missionary work. The Associated Press dispatches of Oct. 17 give some space to an address she delivered before the Woman's Home Missionary Society of the Methodist Episcopal Church at Washington. She urged women to "Spend less time seeking beauty of face and figure and more on mental improvement and in helping other women."

L. M. Johnson, burner at one of the plants of the Whitehall Sewer Pipe & Drain Tile Works, Whitehall, Ill., was a visitor at this office a few days ago. He was on his way to Carey Ohio, his permanent home. Mr. Johnson says the Whitehall works were closed down owing to water famine. The reservoir which supplies the factories with water has run dry and every manufacturing establishment in the little city has been forced to suspend operations. More than 400 employes are idle through the Whitehall plant's shutdown.

James R. Griffis, of the sales department of the Deckman-Duty Brick Company, Cleveland, Ohio, died suddenly Sunday, Oct. 26, his illness lasting only a few hours. He was born in Union City, Ind., Dec. 9, 1876, and was the elder of two children, both sons, born to W. C. Griffis, deceased, and Olive Williamson Griffis, who, with his brother, Howard, of Washington C. H., Ohio, survives him. On June 22, 1905, he was united in marriage to Miss Grace Hiatt, of Winchester, Ind., who also survives him. After graduating from the schools of Union City, he pursued a higher education in Miami University at Oxford, Ohio, the Indiana State University at Bloomington, Ind., Butler University and Indiana Law School at Indianapolis. On being admitted to the bar, he practiced his profession in his home city, served as city attorney, deputy postmaster, and later, to avoid the confinement of indoor work, accepted the position of advisor and assistant-secretary of the National Paving Brick Manufacturers' Association, and, later, after two years' service, accepted a position with the Deckman-Duty Brick Co., of Cleveland, Ohio, in their sales department, and, at the time of his death, had completed three years of most satisfactory service.

Business was begun this week by the $1,000,000 merger of Sioux City, Iowa, brick manufacturing interests. The Sioux City Brick & Tile Co. bill of sale filed transferring Clay Products Co. and arrangements have been made to take over Sioux City Brick & Tile Works. The Clay Products Co. was capitalized at $1,000,000 when it expanded to include the plans of the Sioux Paving Brick Co., and the Lower Brick Co., at Riverside, the Holman Brick Company at Sergeant Bluffs, and the Cherry Red Pressed Brick Company at Correctionville. Huge plants at Riverside and Springdale have been operated by the Sioux City Brick & Tile Works, a closed corporation. All of these plants are included in the merger. The bill of sale of the Clay Products Company was signed by L. W. Mallory president, and J. K. Boas, secretary. Mr. Boas, Tom Green and Frank Green are the principal officers of the new company. Thomas Green, Sr., who has been connected with the brick business in Sioux City many years, will retire. Solid brick and tiling of all sorts, as well as hollow ware, will be manufactured by the mergered company, it was announced. An effort will be made to extend the market in all directions from Sioux City. By reason of large scale production, the Sioux City concern will be able to underbid small local concerns in the territory, in spite of freight cost, it is expected.

COMMON BRICK

C. H. Kean of Gordo. Ala., contemplates installing brick machinery.

F. L. Wilson has purchased the south brick yard property formerly owned by T. M. Merrick at Marengo, Iowa. The property includes 17 acres of good clay land.

At Bay City, Tex., $15,000 has recently been spent in improvements and new equipment at the yard of the Bay City Brick & Tile Company.

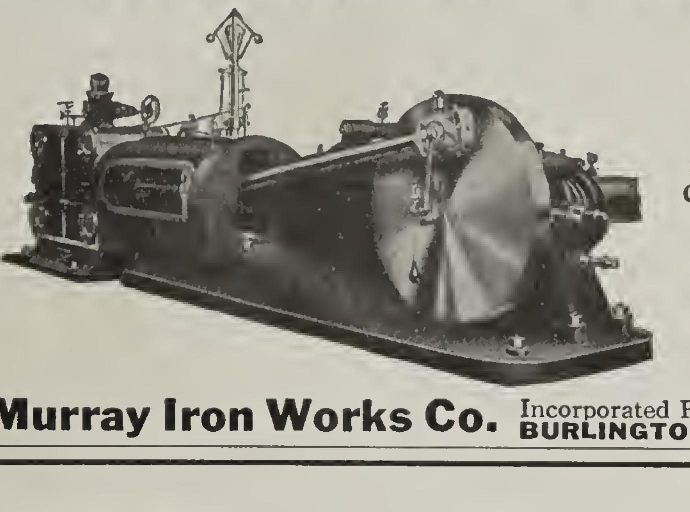
J. F. Hartford, of Post City, Tex., will build a brick plant at that place as soon as financial arrangements have been made with certain local capitalists.

William Thomas, of Windsor, Ont., has bought the John D. Hill brickyard at Essex, Ont., for $8,000. Possession was taken the early part of this month.

The largest stable ever built in Trenton, N. J., will be erected by the Castanea Dairy Company at a cost of $12,000. It will be built entirely of "Jersey" common brick.

The car shops at Ashtabula, Ohio, will require upwards of 500,000 building brick. The contract has been given the Ashtabula Shale Brick Company.

POWER PLANTS COMPLETE
CORLISS ENGINES, WATER-TUBE AND TUBULAR BOILERS



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Pyrometer Advice

Use an accurate pyrometer—or burn by the old method.

Insist on the "Accurate pyrometer's" adaptation to your needs.

Result—Decreased manufacturing cost. Material Improvement in Product.

The Stupakoff Laboratories
Pittsburgh, Pa.

We Manufacture Everything Needed For Dryer Installations.

Our Dryers Get RESULTS.

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SYSTEM OF
WASTE HEAT DRYING

When the Best is Required, Consult Us.

We Are Clay Works Engineers.

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PERFORATED METAL SCREENS

As required for BRICK MAKERS USES.

PERFORATED SHEET METALS OF EVERY DESCRIPTION
HENDRICK MANUFACTURING CO
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Manufactured by
HENDRICK MFG. CO.
CARBONDALE, PA.

THE RICHARDSON-LOVEJOY
ENGINEERING COMPANY
COLUMBUS, OHIO
CERAMIC ENGINEERS
FACTORY ARCHITECTS
GEOLOGICAL EXAMINATION OF PROPERTIES
CLAY TESTING
INVESTIGATIONS OF MANUFACTURING PROPOSITIONS
PLANTS DESIGNED, CONSTRUCTION SUPERINTENDED
AND OPERATIONS DIRECTED
DRIERS, FURNACES, KILNS
REMODELING OLD PLANTS GIVEN SPECIAL ATTENTION
DEVELOPMENT OF NEW LINES OF PRODUCTS
Pamphlet, "Ceramic Engineering." Free

Are Your Freight Rates Satisfactory?

Did it ever occur to you that your competitors in many instances have rates that are predicated upon a more equitable basis due entirely to the aggressiveness of expert traffic men?

We have in our employ men who thoroughly understand these vexatious traffic problems and are prepared to assist you in every possible manner.

Results Produced or No Charge

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715 14th St., N. W., Washington, D. C.

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THE BUCKEYE ROLLING MILL COMPANY
Exclusively Manufacturers of First Quality Light Steel Rails and Accessories
BUCKEYE
Offices: Steubenville, Ohio
MEANS
All Sections from 12 lb. to 40 lb. per yard
BEST
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Mills: Newark, Ohio
MEANS
Write or wire us, when in need.
BUCKEYE
No order too large to handle promptly or too small to secure immediate attention.

Absolute Control of Temperatures in all Kinds of Kilns and Furnaces
Heraeus Le Chatelier
PYROMETER
Recommended by the highest authorities
For measuring temperature between 0 and 1600 deg. Celsius, equal to 2920 deg. Fahrenheit. Successfully used in establishments for the manufacture of Brick, Pressed Brick, Terra Cotta, Pottery, Porcelain, Stoneware, Chamotte, Cement, Glass, Iron and Steel and other metals, particularly for Hardening and Annealing, also for Molten Metals, Cartridges and Ammunition, Chemicals, Gas Accumulators, and by Boiler Inspectors, Schools and Colleges.
Heraeus Patented Electrical Furnaces
For Laboratory and Experimental Use
Fused Silica Ware of Every Description at Moderate Prices
Heraeus Patented Fused Quartz Glass Articles
of every description. This Heraeus Patented Fused Quartz Glass is not affected by any changes of temperature whatsoever, and the co-efficient of expansion is only 1-17 that of platinum. It is of the utmost importance for all purposes where the above qualities are essential. Write for information. Pamphlets and References on Application.
CHARLES ENGELHARD, Hudson Terminal Bldgs. 30 Cortlandt St., NEW YORK CITY

The Excelsior Brick Company, of Fredonia, Kan., is making further improvements to its plant, among which is an unloading dock along its coal track and a conveyor. It is expected that this plant will run throughout the winter.

The Home Brick Company has been organized by C. J. Connors, J. N. Walters and E. H. A. Bellbuck of Los Angeles, Cal., to engage in making brick near that city. The company has an authorized capital stock of $12,000.

Officers of the brick company formed at Basin, Wyo., are: D. L. Darr, Big Horn County Bank president; H. H. Hime, Basin State Bank, vice-president; R. H. Ahrens, clerk of district court, secretary; Boies E. Hart, Pioneer Trust & Savings Bank, treasurer; E. J. Sullivan, director.

The United Brick Company, of Boston, Mass., has been incorporated, with a capital of $50,000, to manufacture brick and fireproofing. The incorporators: G. G. Proctor, of South Boston; G. Y. Young, of Hyde Park, Mass., and G. M. Faulkner, of Brookline, Mass.

A long, wooden shed in Fred. J. Graham's brickyard at Lynn, Mass., caught fire Oct. 27, the blaze being started by sparks from the kilns lighting on the unprotected roof. More than 3,000,000 brick were damaged, the loss being estimated at $2,000.

G. W. Weller, development agent of the Ann Arbor railroad, is trying to secure a brickmaking plant in or near Frankfort, Mich. A boom is expected at Frankfort, owing to the fact that cheap electric power is available, the Aux Scies river having been harnessed to turn the generators.

C. H. Weed, Lucian J. Clarke, M. E. Hitchcock, H. W. Lobb and others of Porterville, Cal., have incorporated the Porterville Brick & Tile Company at that place for the purpose of manufacturing brick, tiling, paving blocks, irrigation pipe, sewer pipe and other clay products. The incorporators of the company control some valuable shale deposits near Porterville.

The Sample-Williams Clay & Color Company has been organized under the laws of Alabama, with a capital of $100,000. The officers are M. L. Sample, president; O. H. Williams, vice-president; A. M. Wing, secretary. The main offices of the company are at Jackson, Ala., and it is its intention to erect a brick and tile plant at the earliest possible date.

The stockholders of the Detroit Vitrified Brick Co., at Corunna, Mich., have ordered the factory closed, as, it is claimed, it has never made a profit, although built more than seven years ago, with an outlay of more than $150,000. Detroit, Mich., capital was invested. Fifty men are thrown out of employment by the shutdown.

R. M. McCreery, of McCreery Brothers, Abilene, Tex., writes that his firm has bought the Lanius Press Brick Company of that city, and will operate it in the future. "We intend, in the near future, to install an oil engine and mixer as well as a lot of other equipment, and will run the plant to capacity, as the demand for a first class building brick in West Texas is excellent at this time of the year."

At Bay City, Mich., the Jennison Hardware Company is preparing to build a brick and reinforced concrete warehouse, 200x 135 ft. Plans have not, as yet, been prepared, and the owners are ready to consider materials. Here is a chance for brick men to get busy with arguments in favor of all brick construction, and an article recently published in "Brick and Clay Record" showing that reinforced brick walls were cheaper than concrete should prove a good opening shot in the campaign. This article appeared in the Sept. 15 number of this magazine.

President H. D. Roy, of the Coral Ridge Clay Products Company, said recently that the company hopes to have its permanent kilns which have been under construction for some time, completed by February 1. It has been shipping brick made in the kilns which have been completed, and some made in temporary kilns, in the interim, and this has confined its sales to common building brick. When the kilns are completed, however, the company will manufacture a full line of face brick, hollow tile and other clay building products of the better grades. Experiments on the various lines indicated have turned out very satisfactorily at the plant, indicating that the raw material available is suitable for these purposes.

Common brick and building tile is now being featured on an extensive scale by the Barkwill & Bradley Company, of Cleveland, Ohio, its plants having a capacity of 450,000 common brick and 200 tons of hollow building tile daily. Mr. Bradley has been engaged in this business for the last twenty years, while his partner and old friend, C. G. Barkwill, has been identified with the clay business since he was a youngster. It was this company that secured the contract for furnishing over four million common brick to be used in the construction of the new City Hall building in Cleveland. The general business of this company during the past year has shown a handsome increase over the previous season.

FACE BRICK

The Far West Clay Company, Tacoma, is furnishing the Denison block backing and the new rough faced brick which is known as "Fabrick" for the three-story apartment house being erected by P. C. Creso. This new type of brick is just now being placed on the market.

The R. B. Tyler Company, of Louisville, Ky., is furnishing 150,000 Claycraft brick for use in the six-story Puritan apartment building which is being constructed at Fourth and Ormsby avenues, in Louisville. The company reports an unusually weak demand for brick, due to the inactivity in building in this section.

The Pacific Face Brick Company, Commercial Club building, Portland, has recently furnished or is furnishing brick on the following jobs: A three-story hotel at Carlton, Ore., for J. D. Brooks; the Northwestern Bank building, a 15-story structure being erected in Portland; the Ford Motor Car Company building at Seattle; the Kenton and Hoffman schools in Portland, and a school house at Hoquiam, Wash. The company is furnishing for the Oregon Denison Block Company, Chamber of Commerce building, Portland, Denison interlocking tile on the following buildings: The W. H. Raabe building, Portland; the Wheeler Lumber Company's kilns at Wheeler, Ore.; the Courtney building, in Sheridan, Ore., and others.

FIRE BRICK AND REFRACTORIES

The North Birmingham (Ala.) Fire Brick & Roofing Company increased its capitalization from $50,000 to $75,000.

William G. Griffiths, of Pittsburgh, Pa., with several business associates, have taken an option on about 200 acres of fire-clay property in Bloom township, near South Webster, Ohio. The company will organize soon, according to report, and begin mining fire-clay on an extensive scale.

Fire-clay, discovered at the dump heap of the Isaac Wantling Coal Company, makes probable the starting of a brick plant, near Peoria, Ill. It is said that the company has 350 acres of land in which this fire-clay runs near the surface. It is said to be of excellent quality and capable of making a very dense, hard brick.

SEWER PIPE AND DRAIN TILE

B. C. Morrison, of Franklin, Ind., will start a drain tile plant in the vicinity of Mankato, Minn.

City Engineer A. R. Garnock, of Eau Claire, in his recommendations for the new sewer system at Menomonie, Wis., includes the use of brick for 2,500 feet of main sewer.

A tile plant, located near Troy, N. Y., was used as headquarters by a gang of counterfeiters, recently rounded up by the U. S. secret service.

I. C. Adams, of Wellman, Iowa, has sold his brick and tile plant to a Mr. Johnston, of Des Moines. He received, in consideration, a 836-acre farm, near Paris, Mo.

A. S. Rosing, of Chicago, has bought the entire output of the Woodland Clay Company's plant at Watseka, Ill. The contract is for two years from June 1, 1913.

The Frederick (Ill.) Brick & Tile Works is keeping up shipments and deliveries, and predicts a good Fall trade. Farmers in that vicinity are beginning to see the wisdom of tiling.

A clay mine that was being opened by the American Sewer Pipe Company at its Black Horse plant, at New Cumberland, W. Va., across the Ohio river from Empire, Ohio, was badly damaged a few days ago through a premature explosion of dynamite.

The Reclamation Service, at Great Falls, Mont., is asking for bids on material for the Pishkun Reservoir supply canal, in connection with the Sun River irrigation project in Montana. Some 24,000 linear feet of drain pipe will be required. The bids will be opened December 18, at the office of the Reclamation Service.

The Evans Clay Manufacturing Company, of Uhrichsville, Ohio, manufacturers of sewer pipe and tile, have about completed improvements to its plant which will about double the capacity of the works. Among the improvements have been the installation of three 150-h.p. Erie City boilers and a 20 by 40-ft. Allis-Chalmers engine and other operating machinery.

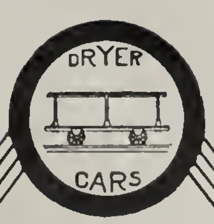
Rapid progress is now being made on the drainage system for the Kearney ranch near Fresno, Cal., where 60 men have been at work for several weeks. The main drainage line of 7,000 ft. has been completed, and 16,000 ft. more are to be laid in laterals, the system converging to a sump hole from which the water will be pumped into an irrigation ditch.

The Lisbon (Ohio) plant of the American Sewer Pipe Company, which has been in continuous operation for the last nine months, has closed down for an indefinite period. About fifty employes are idle, work in the coal and clay mines at this plant having also been suspended. The East End plant at East Liverpool, Ohio, of this company, however, continues in operation, working to capacity.

The W. S. Dickey Clay Mfg. Company has purchased a plant site close to Muskogee, Okla., on which it expects to build, in the near future, a modern, up-to-date clayworking plant, plans for which are now being prepared. The output will be salt-glazed sanitary sewer-pipe, wall-coping, flue-lining, hollow building blocks, fireproofing, etc. It is claimed that this new plant will be the finest clayworking plant in the country.

The Pacific Coast Shale Products Company has been incorporated at Porterville, Cal., with a capital stock of $100,000 by H. W. Lobb, C. H. Weed and H. E. Doyle. The company has a large shale bank near Porterville, with which some successful experiments have been made, and the new company expects to start a factory at an initial cost of about $60,000 for the manufacture of sewer and irrigation pipe, pressed brick, etc. The raw material can be readily handled by a gravity system, and the location is favorable in regard to cheap electric power and fuel. The company expects to have a good market for these products between Fresno and Bakersfield.

KoPPeL Cars
Dryer And Clay



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The Name
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itself implies something—but its use proves **more**. It is remarkably durable and its initially good qualities last through out, until it is worn down to the thinness of paper.
It is anti-friction, has practically no shrinkage and is a glutton for heavy pressure and high speed.
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To pay freight from Spokane on a slip superior to what you have been using?
If so, We Can Deliver The Goods
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Saves Labor and lowers percentage of off-color and second quality ware.

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Works just as hard day after payday as day before. Takes no holidays.

THE RUST Clay Feeder
Insures an Even Mix of Clay and. Makes a Right Start toward a Perfect Product.

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CLAY HAULAGE
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Small Size—Reasonable Cost—Especially built for use of clay-products manufacturers, for hauling clay or shale from pits or mines to plant.

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St. Paul: 1308 Pioneer-Press Bldg.
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New York City: 362—50 Church St.
Vancouver: 175 Cordova St.

All of the bids submitted to the contract committee of the Louisville Board of Park Commissioners for pipes for the drainage of the Western Parkway and the Beall's branch road were rejected by the committee recently, the committee alleging that the bids did not differ materially in point of the amount and being far higher than former bids submitted. It is understood that after the bids were rejected the P. Bannon Sewer Pipe Company agreed to furnish the pipe desired on both jobs at the rates prevailing under the former contract, and one of the committee recommended the acceptance of this offer, which the Board concluded was the best course. The bidders were the Louisville Sewer Pipe Company, the Louisville Builders' Supply Company and the P. Bannon Sewer Pipe Company.

The sewer-pipe plant of Washington Brick, Lime & Sewer Pipe Company, situated seven miles east of Spokane, is being increased as to kiln capacity to meet the demands for sewer pipe. The season has been a busy one, and a visit to the plant furnishes evidence of the company's activity. The ample yards are full of stock of all sizes in demand. The clay sheds contain big supplies of different kinds of clay hauled from Clayton and Mica. The three drying floors of the main brick building contain large stocks of fresh pipe in course of manufacture. The kiln yard, which is covered and enclosed on all sides, contains 9 down-draft kilns, 28 feet diameter with four brick stacks. Two more kilns, under construction, are of the same style as the others.

Material from the Mica beds is a fire clay—red, and the white and yellow; the red clay gives the body, the white and yellow, the cohesion. The Clayton clay gives color and smoothness of surface. About 55 tons of these different grades are used daily. The clay is hauled in bottom-dump cars to the sheds, and dumped so as to discharge upon a belt conveyor, by which clay of different grades is thrown in separate heaps. Here the clays are mixed to give the required consistency, and then pulverized and worked by two 9-foot dry pans. It is then elevated and passed through two wet pans, giving it a tempering process. The next step is to elevate the mixture to a higher floor, where it is fed into a Stevenson steam press, by which the material is formed into pipes. This is readily adjusted for different sized dies, bells and extension rims for making pipe of different sizes. This machine is rapidly manipulated by hand levers, making 4 pipe joints at a time.

After the requisite drying period the pipe is subjected to 5 days' burning in the kilns, in connection with which a salt glaze is given. At this plant sewer pipe is made in all sizes from 4-inch to 24; and on order the company makes drain tile, wall coping and building blocks. The superintendent of the plant is C. L. Michels, who has had experience at many plants in the eastern states. The company has a force of about 60 men at this plant.

HOLLOW BLOCK

Clippert, Spaulding & Co.. of Lansing, Mich., are considering a change from their present output, which is brick and tile, to the exclusive manufacture of hollow tile fireproofing.

A notice of dissolution has been filed by the Interboro Fire Proofing Company, of New York, which was dated Oct. 18, 1913. The concern had a capital stock of $500,000 and the incorporators were Anthony Real and Edson G. Wordon.

Fire, originating from an overheated kiln, destroyed the plant of the Pittsburgh Tile Manufacturing Co., of East Liverpool, Ohio, on Oct. 23. More than 35 men are thrown out of employment and the loss is estimated at $10,000.

The Far West Clay Company, Tacoma, is furnishing the hollow tile for the dry kiln of the Buffelen Lumber Company in that city; also for the Pacific States Lumber Company at Selleck, Wash. At Seattle the company is furnishing the tile for the lock keeper's house on the Lake Washington canal.

W. E. Jeffreys, of Rocky Mountain, N. C., has bought out the interest of R. H. Hicks in the Jeffreys-Hicks Clay Works, and will make a number of improvements during the Winter to meet increased demands for his output. In a letter to "Brick and Clay Record" he states that the outlook for 1914 is very promising.

A reorganization of the National Clay Products Company, of Baltimore, Md., has been effected, whereby Samuel A. VerValen becomes president, Richard N. Jackson, vice-president, and E. E. Jackson, Jr., secretary and treasurer. The operation of the plant at Langdon and U streets, N. E., Washington, D. C., is in charge of John W. Olsen.

PAVING BRICK

Geo. Welch, of Beloit, Wis., who was the contractor for paving at Lake Mills, Wis., to the amount of $24,000, got the contract for 14,000 yards of brick paving at Beloit, at $23,000.

At Connellsville, Pa., 175,000 pavers which had been distributed along a section of the State road have been condemned by Jay Davis, the inspector.

Abilene, Kas., will be a fertile field for paving brick men in the Spring. Every street in the city which is not now paved will be taken care of as soon as Winter is over. It is understood that brick is to be used largely in the work.

The plant of the Wassall Brick Company, near Glouster, Ohio, which is south of Columbus, has sold its holdings, including all real estate, to the Trimble Brick Company of Dayton. The latter concern is a newly formed corporation, with a capitalization of $350,000. It is understood that the same company will buy another plant in the same district in the near future.

It is said that a fortune awaits the man who can make good paving brick from Florida clay. Although the clay is found in abundance at many points in the state, it is so sandy that it has to be given special preparation before it can be used. There is a tremendous demand for paving brick in Florida, much of the material now being used coming from the vicinity of Baltimore, Md.

A test section of the Pacific highway, 1,000 feet being paved with brick without a concrete base, has just been completed by the Denny-Renton Clay & Coal Co. The cost of construction is said to be $2,000. It differs from the ordinary brick paving in that the foundation is the ordinary macadam. The difference in cost, between this type of road work and the regulation brick paving on concrete foundation, is, it is said, $7,000 a mile.

Operations have been resumed at the Reynoldsville (Pa.) Brick & Tile Company's plant, after a suspension made necessary by the exhausting of the original bed of shale which had been used for pavers. The supply of clay for building brick was ample, and the company was able to run through the Summer, without, however, being in a position to care for all of the paving block business that was offered it. Adjoining realty has been purchased and there is now enough raw material in sight to take care of the requirements of several years. A tram-road is being built from the new holdings to the old plant.

The Independence Brick Company, of Independence, Kans., has issued a booster postcard. It manufactures a vitrified paving block and these, used in connection with a cement foundation and an asphalt filler, is what it terms "The A. B. C." Pavement. A novel plan on this trademark name is brought out on the booster card by an arrangement of the three letters so that the trademark stands out as an acoustic, each of the three letters being the initial of the three words Asphalt, Brick and Cement. The card not only boosts the Independence A. B. C. Pavement, but also the city of Independence, declaring it to be "the best paved city in the world for its size."

Commissioner of Works C. W. Linsley has received samples of wire-cut-lug paving block, the most recent development in brick paving, which he plans to use in East Bridge street between First and Fourth streets, Oswego, N. Y., says "Municipal Engineering." John Henrick to whom the contract was granted a few months ago, agrees to a change in the specifications from the vitrified brick which former Commissioner John Smith planned to use, and enough brick will be ordered so that with an early Spring delivery there will be no delay in starting the paving work and rushing it to an early completion. Wire-cut-lug paving blocks, according to Commissioner Linsley, have been found to give great satisfaction wherever tried. Their cost is the same as the variety in use here in the past, and if the results on the East Bridge street pavement are satisfactory, they will be specified exclusively on all future contracts.

POTTERY

The U. S. Stoneware Company of Akron, Ohio, wants information relative to analysis of clay, and to chemicals for clayworkers' use.

E. G. Krebs, of Tillamook, Ore., writes, "Please let some firm know that I am in the market for some glaze or slip for pottery."

Kiln sheds have been built over all kilns at the plant of the Hawthorn Pottery plant at New Bethlehem, Pa. This concern plans to go into the art pottery business at an early date.

The Cannelton Pottery Company plant, Cannelton, Ind., is in clover after being closed many months. A southern firm has contracted for the entire output.

The John G. Burroughs Pottery at Crooksville, Ohio, was closed down Oct. 13, on account of labor shortage. It is not known whether it will start up in the near future, or remain closed for some time.

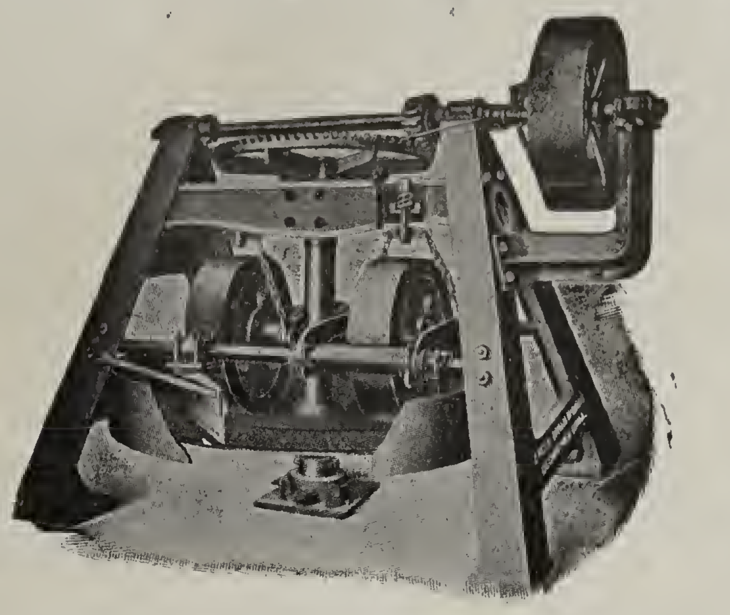
Fire insurance is not altogether satisfactory. The pottery at Macomb, Ill., which was destroyed some time ago, the loss being estimated at $364,000, received $49,000 through its policies of insurance.

The first consignment taken from the bonded warehouse at Seattle, Wash., after the signing of the Underwood Tariff bill, was $20,000 worth of Japanese porcelain, which had been imported and allowed to stay in bond, until the signing of the bill cut the duty almost in half.

Starting operations in the new 15-kiln-unit potteries at Newell, W. Va., will mark one of the most important events in the industry in the West Virginia district. One of the plants is owned by the Edwin M. Knowles China Company, of Chester, a town four miles up the Ohio river from Newell, and the other is owned by the Homer Laughlin Company, which is now operating a 32-kiln plant at Newell. This 30-kiln addition to the general ware trade is claimed to be able to produce more ware than did the number of kilns that went out of general ware during the past few years. Something more than thirty kilns went out of the business, but the capacity of the new Knowles and Laughlin kilns is much more than that of the kilns formerly built. After these new pottery units have been placed in operation, report is current that the Knowles interests plan to add three kilns to their Chester plant, which will give this firm a capacity of eleven kilns at that point. West Virginia has had more general ware kilns added to its pottery production during the past two years, than all of the other states in the Union combined.

All of the machinery in these new plants are individual electric drive, they being the only plants in the Western district to use this system. Both companies manufacture their own power.

The "Eagle" Dry Pan



With independent and suspended mullers,
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See this car before placing your order.
We also manufacture a full line of Side Dump, Bottom Dump and General Purpose Cars, Transfer Cars, Turntables, Switches, etc.
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Modern YARD SUPPLIES

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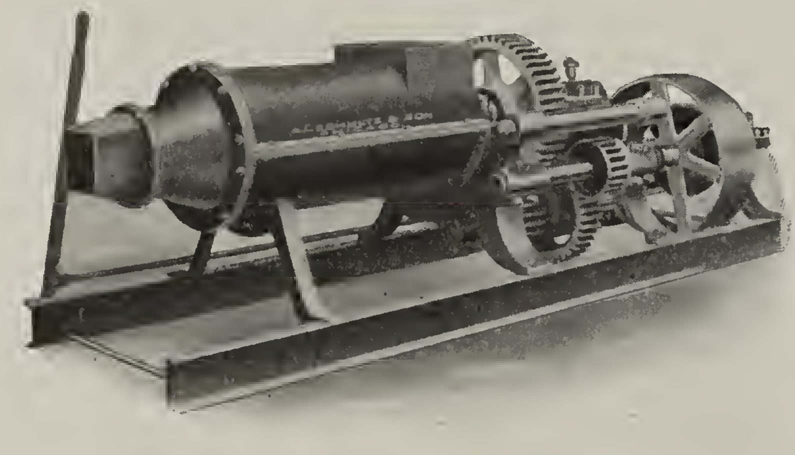
For Brick, Tile and Terra Cotta Plants

We make a specialty of designing and furnishing complete machinery equipment for all kinds of clay-working plants, including expert engineering service in supervising erection and installation.



Double Pug Mill equipment, especially designed for the perfect preparation of material in the manufacture of terra cotta.

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Complete brick plants furnished promptly, including auger machines, pug mills, clay cars and granulator shafts.

Cutting and cut steel gears always in stock for brick machines, also granulator knives.

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Pottery manufacturers in the East Liverpool and Wellsville, Ohio, and the Newell and Chester, W. Va., districts will not have any differences to adjust with the stationary engineers until next July. A few members of the engineers' union in these districts made an effort to secure an increased wage on Nov. 1. When the men were reminded that the pottery manufacturers had an agreement with the union of engineers that did not expire until next year, they realized that no new scale could be presented now.

The strike of the clay-makers in the potteries in the four towns mentioned above has been adjusted, and the workers have returned to the "slip houses." While the strike was a short-lived one, it caused, for a time, some grave anxiety among the manufacturers and the workers identified with the National Brotherhood of Operative Potters.

The clay-makers were out only a few days, and in that time are reported to have made an effort to get the boys employed by the jiggermen, turners and others in the upper clay shops to come out on strike with them. The boys are not organized, and the clay-makers are not connected with the Brotherhood. The latter did not give the former union any support at any time while the strike was on, and the effort of the I. W. W. to butt into the strike also failed.

The Labor Committee of the United States Potters' Association presented the following proposals to the clay-makers, but they were all turned down by the latter, during the earlier negotiations:

"Whenever the present price of one cent per leaf for making clay was satisfactory to both the man and the manufacturer, that the present price should be continued, by reason of the fact that it is satisfactory to the men in quite a number of plants.

"Where the price is not satisfactory in shops where the men cannot make out at that rate, we would pay a day wage, at a rate to be arranged between the men and firms for whom they work.

"Should any disagreement arise between the men and the firms as to an adequate day wage, the matter should be referred to the clay-makers' committee and ours for adjustment."

At a later conference between the strikers and the Labor Committee, the strike was settled on these terms. While the strike lasted, however, no potteries were idle. Some pottery owners went into the clay cellars and made clay, while in other plants, the general managers and superintendents made the clay. The clay-makers gained nothing by going on strike.

Clay hands have started work in the new plant of the Shenango China Company, at New Castle, Pa. For nearly six months the company has been engaged in renovating and rebuilding, practically speaking, the former plant of the New Castle Pottery Company. Vitreous hotel china and china dinner ware is being made exclusively by this company.

Inability to obtain sufficient labor has caused the Burley & Winter Pottery Company, of Crooksville, Ohio, to suspend operations in its No. 3 plant at Crooksville. No time for resumption is set. The company has ample business on its books, but cannot operate to capacity to make prompt shipments.

A shortage of gas at Coshocton, Ohio, may cause the Pope-Gosser China Company to revert to the use of coal for kiln firing. In the East Liverpool, Ohio, district the gas producing companies have increased the price of gas to manufacturers, and, although based upon a sliding scale, it is the heaviest ever paid for this fuel. There is little doubt that should another advance in the price of gas take place, the manufacturers will be forced to revert to the use of coal. The Trenle China Company is now using coal exclusively for kiln firing, and claims that it saves considerable money over the firing with gas at current prices.

Plans are being completed by Cassius Metsch, of East Liverpool, Ohio, for the erection of a seven-kiln pottery at Grafton, W. Va., which will be operated under the management of A. O. C. Arhendts, of the Consolidated Supply Company, of Chester, W. Va., and S. B. Davis, a pottery salesman of Chicago. The citizens of Grafton raised a bonus of $37,500 for the new plant. Construction is expected to be started before the end of the year.

Within a few weeks the new plant of the General Electric Porcelain Company, at Parkersburg, W. Va., will be completed and ready for operation. A lot of business which was formerly given to the porcelain plants in the East Liverpool district will be diverted to the plant at Parkersburg. George Anderson, secretary of the General Porcelain Company, will have the direct management of the new property. Several of the plants at East Liverpool, which are connected with this company, will suspend operations when the large Parkersburg plant is started.

ARCHITECTURAL TERRA COTTA

The Steiger Terra Cotta & Pottery Company of San Francisco is busy making the terra cotta for the Polytechnic High School of San Francisco, and will start making deliveries soon.

Gladding, McBean & Co. of San Francisco, Cal., have taken the terra-cotta contract for a new post office to be built at Pasadena, Cal. This company has taken considerable business in southern California this year.

FLOOR AND WALL TILE

Insurance has been adjusted and the plant of the Lippincott Tile Company at East Liverpool, Ohio, will be rebuilt. It is held that this company is the only one in the country manufacturing the particular kind of tile that it manufactures. The work of rebuilding will take from 60 to 90 days, but it is expected that the plant will be in operation in time to fill orders for Spring delivery.

SAND LIME BRICK

More than 500,000 sand-lime brick were supplied to the West Seneca (N. Y.) High School by the Buffalo Sandstone Brick Company.

The Michigan Reformatory's new factory building at Iona, Mich. took 600,000 sand-lime brick, manufactured by the Grande Brick Company, of Grand Rapids, Mich.

The Hummelstown Brownstone Brick Company, of Waltonville, Pa., supplied the brick used in the high school building at Pemberton, N. J.

In the Duval High School building at Jacksonville, Fla., sand-lime brick manufactured by the Bond Sandstone Brick Company of Lake Helen, Fla., were used exclusively.

The Bond Sandstone Brick Company of Lake Helen, Fla., supplied the red and white sand-lime brick used in the public school recently erected in its home town.

A newly incorporated concern, the New Orleans Brick & Stone Company, is planning to erect a plant on a large tract at Westwego, in Jefferson Parish, La. The cost will be $150,000. Leo A. Marrero, of Jefferson, La., is president.

RECENT INCORPORATIONS

George Nunn & Co., of Detroit, Mich. Incorporated to manufacture brick. Capital, $18,000.

Fort Worth (Tex.) Pottery Co. Capital, $25,000. John Scharbauer, B. P. Brummett and G. G. Willingham.

Ashtabula Shale Brick Co., of Ashtabula, Ohio, has increased its capitalization from $150,000 to $225,000.

Snow Shoe Fire Brick Company, Snow Shoe, Pa., has increased its capitalization from $60,000 to $130,000.

The Dominion Clay Products Company, Ltd., of Toronto, Canada, has been incorporated with a capital stock of $150,000.

The Adair Company, of Chicago, Ill., has changed it corporate name to the Atlas Brick Company, and increased its capitalization from $10,000 to $140,000.

A new brick company, to be known as the Ormstown Brick Company, Ltd., of Ormstown, Que., has been incorporated with a capital stock of $500,000.

South Park Sewer Pipe & Drain Tile Company, South Park, Ohio. Capital, $20,000. Ernest Finch, Phillip Finch, Jos. F. Olaynick, Mary J. Finch and Arthur A. Thorn, incorporators.

John J. Kearney, J. J. Fesenmeir and R. A. Goodwin have incorporated the West Virginia Paving & Pressed Brick Company at Somerset, Pa.

Banfield Clay Company, Irondale, Ohio. Manufacturing sewer pipe, brick and other clay products, $100,000. William Banfield, J. W. Banfield, E. E. Erskine, Charles A. Vail and Louise O'Neil incorporators.

Rush Creek Clay Company, Junction City, Ohio. Brick, tile and building block. Capital, $25,000. John E. Landrum, John Edward Landrum, Harry Landrum, Paul J. Landrum and George C. Landrum, incorporators.

Littleton Brick Works of Columbia, S. C. Capital, $10,000. To make brick, tile, terra cotta pipes and other clay products. E. N. Chisholm, Jr., and Washington Clark, of Columbia, S. C., are the incorporators.

Standard Shale Clay Company, New York City. Capital stock, $50,000. To buy, sell and deal in and with rock, silica, stone, kaolin, clay and other products. Incorporators: F. B. Knowlton, M. A. Hickey and John McLaren, all of New York City.

Hillsborough Brick Company, of Mango, Fla. Offices in Tampa, Fla. Capitalization, $50,000. B. F. Stephenson, of Detroit, Mich., president; Carl G. Trebein, of Toledo, Ohio, vice-president; Carl S. Johnstone, of Toledo, Ohio, secretary-treasurer.

Testing Machinery at Sheffield, Iowa.

Professor Claghorn, of the mechanical engineering department, and Professor Payne, of the electrical engineering department, with several students from Ames, are here making an efficiency test of the equipment at the Sheffield (Iowa) Brick & Tile Co.'s plant. The test is being made at the request of the company for the purpose of finding the weak places, if any, and to find where improvements would be to advantage. A scientific test is being made of each machine with relation to the number of horsepower required to run them and also the combination of the machinery. The engines are being tested to see that plenty of power is being developed which is a certainty with the new steam turbine. Progress is the watchword down there, as the dryer has been made a third larger, a new cutting machine, a new switchboard and a new dynamo have been installed and a spur or side track nearly a quarter of a mile in length, approaching the plant from the south and running along the east side has just been completed. Claude Smith, who built the present kilns, is making arrangements for the construction of four more and the work will begin at once. The combined cost of the improvements will amount to about $25,000.

To Prevent Scum Appearing on Your Brick, Terra Cotta, Etc., Use

R. H. Precipitated Carbonate of Barytes

Literature on Application

Other High Grade Chemicals For Clay Industries

The Roessler & Hasslacher Chemical Company

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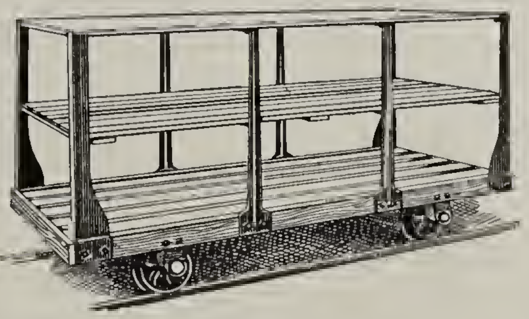
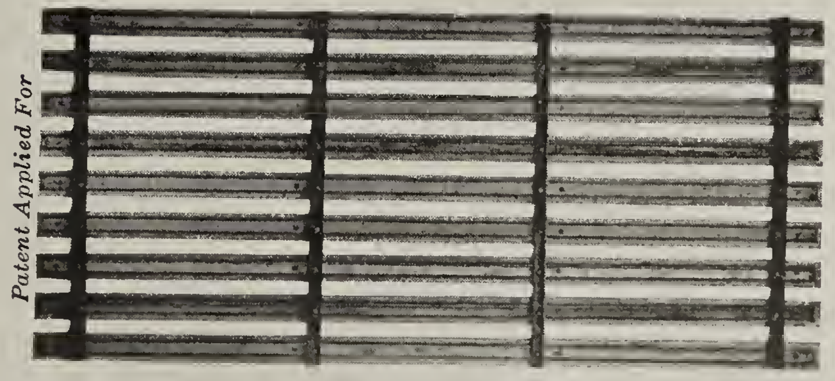
Manufacturers of the famous

Vulcan Dryer Cars

Over 4000 in use in Mason City



Write for particulars about them and the Vulcan Improved Combination Wood and Steel Decks.



Also grey iron castings for all kinds of brick and tile machinery.

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MASON CITY, IOWA

Save Horse Power

Good horses are expensive; so is feed. You want to get maximum results from your equipment.

Increase the efficiency of your delivery department by adopting Martinsburg Brick Wagons. You can haul 1/3 more and save 20 to 30 minutes unloading and *without breaking or chipping the brick.*

If you're from Missouri—ask us.

Auburn Wagon Co.
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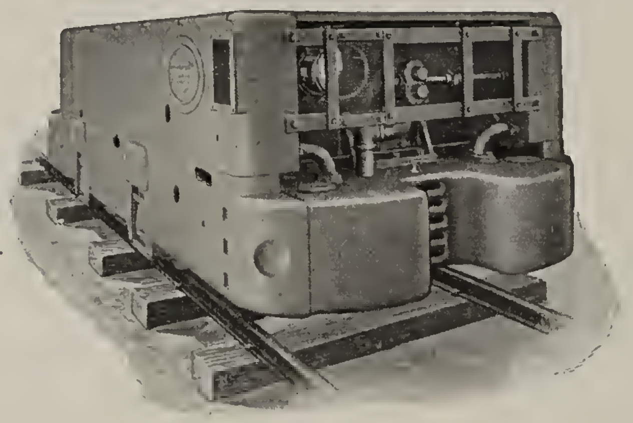
Gasoline Motors



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2½ to 16 Tons Weight.

Geo. D. Whitcomb Co.
Rochelle, Illinois

The Letter Box

Wants to Convert Fellow Townsmen.

The following letter comes from Harley H. Fate, president of the J. D. Fate Company, Plymouth, Ohio, and shows the proper co-operative spirit. If every man in the country, who is really interested in seeing burned clay progress, would follow Mr. Fate's example, what an army of boosters we would have! Here is his letter:

> I am very much interested in the report of Paul E. Green on the "Wayne County Concrete Roads" and that of William R. Hayes, on the same subject, which appeared in the October 7 issue of "Brick and Clay Record." I understand that you have published these reports in a pamphlet and if this is true I believe it would help us solve a problem in our home city.
>
> We have been having a little fight on down here in regard to paving. We paved our Public Square with brick and it has given satisfaction to every one, and this Fall we started to pave another street. Two-thirds of all the property owners on this street asked for brick, but the council, for some reason or other that cannot be explained, gave the contract for concrete.
>
> In the Public Square that was paved with brick, there are more square feet of paving than in the strip they are concreting, and the concrete job with less than one-third the square feet, is costing $4,000 more money than the brick. You see, there is a nigger in the woodpile somewhere, and, of course, we want to chase it out. If we send a list of names of owners on the street being paved and streets contemplating paving, will you send pamphlets to each one?

The list of names were sent us and copies of the pamphlet were mailed to each address. We might add that we have been of similar service to F. L. Eliot, manager of the National Fireproofing Co.'s plant at Delaware, Ohio, who asked for literature to combat the foes of vitrified brick in his home city. Mr. Eliot is not making paving block, and neither is Mr. Fate, but both believe in the supremacy of burned clay. This sort of co-operation is practical.

Believes Low Prices Best Seller.

One of our staunch friends and a progressive manufacturer of burned clay products—Alberto N. Reed, of the B. H. Reed & Bros., of Hightstown, N. J., writes us as follows:

> The article in September 15 "Brick and Clay Record" on reinforced brickwork being cheaper than concrete is the kind of articles the brickmakers need. Cheapness is the whip that makes the mare go. Some clayworkers advertise brick houses faced with $25 face brick and say they will cost about 10 per cent more than frame. With 90 per cent of the builders that the ads. reach this has just about as good a chance selling to them as if you dug a little hole in the ground and talked into that.
>
> One of the advantages of a brick house should be that it is as cheap as frame or any other kind, or perhaps cheaper. A nice brick house can be built faced with a good run of common brick at about $9 per M. This would cheapen it somewhat in price and it would look all right, too. That kind of literature should be printed and sold to the brickmakers.
>
> You were talking of publishing plans of a brick house with tile floors and partitions. If you need any help, perhaps you could get it from Messrs. Jackson, Rosencrans & Waterbury, 1328 Broadway, New York City, N. Y. This company planned the new dormitory building that was built for Peddie Institute in this city. There is said to be no finer buliding in the state. It was built of brick with tile floors and tile partitions, the floor tile were clay tile and they used a gypsum tile for the partitions. The clay tile in the partitions would have been better.

Mr. Reed is right—the clayworkers need educational articles to present to their prospective customers. The buying public knows too little about burned clay and the average man has an idea that brick houses are only to be had by the millionaire. Such articles as we have been printing of late in our educational series, if properly distributed, will do much to show the people how and why to use burned clay products. The hollow tile article Mr. Reed mentions was printed in our Oct. 21 issue, and we are sorry the suggestion he made did not reach us in time to get the additional information mentioned. We may be able to use it later, however.

Lost in the Bigness of Modern Methods.

Often it has been said that a readable newspaper or magazine is like a well-arranged menu or bill-of-fare in a restaurant—it contains everything worth while so that the subscriber, no matter his tastes or desires, may find what he is looking for. Having found that—like the man at the restaurant table, he takes it and discards the other, realizing that what he does not want may be wanted by someone else.

Recently one of our old-time subscribers ordered his subscription to this magazine discontinued. The editor naturally was interested in wanting to know why he was losing an old friend and wrote him for a letter of friendly criticism, believing that his reply would give the editor a "tip" whereby he might improve "Brick and Clay Record"—a constant desire on his part. This subscriber was none other than C. A. Zender, of Littleton, Ill. Here is his letter:

> Replying to your letter I will say that the main reason that I have discontinued "Brick and Clay Record" which I have taken for some time (5 years) is that I have used its want ad. pages to dispose of some machinery, and contemplate to do so some more in the future.
>
> Another reason, now that the subject is up, is perhaps expressed by "Incompatibility," in the "Bigness" of modern clay works. All "poetry" is knocked out. My fond recollections go back to the days when I molded my "5,000" from the mouth of the old squeaky gun, with an eye open and we were always awake at night, for the incipient midnight shower.
>
> Those were glorious days! Two or three burns per season! By the first hard frost the season's "toil" was ended, then joy for months! Discussions of dogs, guns, quail, rabbits, turkeys! Do you get the idea? Now, if you could put in a little of the smoke—the real wood smoke of the old clamp kiln, and a hint of the "taters" and chicken that had a way of coming to the burns at night, or to the fire-light discussions, of mighty valor, in stunts of molding, setting, or "good hard" brick in your journal, I am quite sure I would not give it up. However, I assure you of loyalty to "Brick and Clay Record" and a continued everlasting friendship, with a sincere wish for its continued usefulness and for its due, in prosperity.

It is of some relief to know that retirement from business is our friend Zender's chief excuse, although the circulation manager whispers quietly to the editor that even a man who has spent years "in the smoke of the old clamp kiln," and surrounded by "a hint of the 'taters' and chicken that had a way of coming to the burns at night," naturally should hesitate to cut himself away from all the memories of the past when he lays aside his sand mold and lets the kiln fires die out. This suggestion from the C. M. may or may not be appropriate here and it is not for the editor to show such a spirit of commercialism as to do more than mention it, for editors are not supposed to be versed in these things. However, if we may venture to say it, we opine our friend Zender will miss the familiar pages of his "Brick and Clay Record" more than once this coming winter and many winters to come, as he basks his chilblains before the cheery hardcoal burner, even if they do not carry "the flavor of bygone days" and all "poetry is knocked" out of the clay industry of today and he finds himself suffering from "incompatability in the bigness of modern clayworks."

We are sorry to lose our friend Zender but promise him if he will stay in the family we will reserve a little corner somewhere in the magazine where he and whatever others of "the old school" there may be can commune quietly and swap yarns around the midnight fires of the kiln which he still lives in, but which the relentless march of progress has made almost only a dream.

Questions New Gas Burning System.

Our next letter is from a manufacturer of clay products in the middle West. For obvious reasons our correspondent asks us not to mention his name. He is one of the largest and most successful manufacturers in the country and the questions he asks are prompted by a desire to draw forth a profitable discussion on a subject that is ever new. He says:

> I wish to make a few remarks or ask some questions in reference to the system of producer gas firing described in the Oct. 21 issue, since the writer is at a loss to understand the efficiency in this system. In the first place, it cannot be denied by those experienced in the use of producer gas that a large volume of the heat units contained in coal is wasted in the production of gas by the gas producer. In fact, I have heard from good authority that 33% of the heat is used in producing the gas at the producer. A part of this 33% is saved, providing the producer is close to the point where the burning in kiln takes place, so that the gas is conveyed to the kiln without losing heat by radiation. This might possibly be denied by the manufacturers of some of the producer-gas-fired kilns.
>
> The principal question that the writer wishes to ask is what is the efficiency or perfect combustion of the gas after it reaches kiln? Everybody knows that producer gas will burn if the air that supports combustion has not been pre-heated, but it is generally understood that perfect combustion from producer gas cannot be obtained without first pre-heating the air that supports combustion. It is a simple matter to obtain pre-heated air in a continuous kiln. For this reason producer-gas firing in continuous kilns has met with success.
>
> The writer does not question the possibility of producing merchantable brick in a producer gas fired updraft kiln, but he does question the fuel efficiency.
>
> The clays of Detroit require a low temperature and a small amount of heat to burn and the cost of fuel per 1,000 brick is not a very important factor in cost of producing brick, and the better quality brick at an increased

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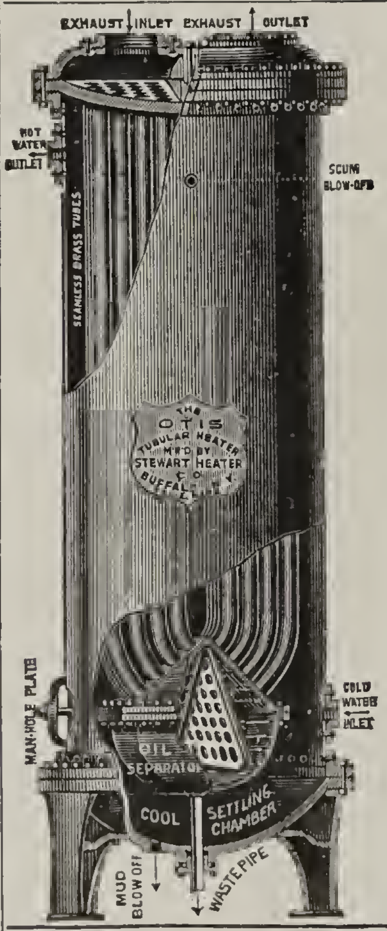

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fuel expense would make it worth while in Detroit, but the large per cent of clays and shales found throughout the country burn at a much higher temperature requiring much more fuel so that fuel efficiency is a vital point.

Another point that may be misleading is the comparison as it has been put with oil for burning. The price of oil is prohibitive, that is comparing it with coal in heat units. They use oil for burning some up-draft kilns because they have no control of the draft in a up-draft kiln and cannot equally distribute the heat as in other kilns. By using oil they can throw a long flame, in fact it is possible to have combustion take place from ten to fourteen feet from the end of the burners, so in reaching the center of a up-draft kiln they are able to get better results—more first class brick—which pays for the additional fuel expense. The common brick in Chicago require a low temperature and a very small amount of fuel for burning; also coal-fired up-draft kilns are prohibited on account of the volume of smoke given off.

We pass this correspondent's letter over to our readers for discussion.

As to Clay Analysis.

Another letter from the same correspondent as the above is equally as interesting. It says:

> The writer would be very much interested if you could stir up a discussion in your paper as to the best methods of testing various clays to determine whether or not they would produce merchantable brick or tile. You hear from all corners of the continent, "I had so and so test my clay and he pronounced it very fine and upon his recommendations I built a plant and now find that my clay will not produce the goods." The brick machinery people say, "send us a barrel of your clay," but they will run it through a machine that is already full of clay and they will run that same clay through and through, and if the tile cracks when drying they will grind it up and run it through again. By this time it is well mixed with other clays and so thoroughly pugged that a good product results. You might say, "send it to the Ceramic Universities."
>
> We have built several plants of our own, eight all together. Our third plant developed into a money maker, but it was a failure at first since it would not produce the ware that we wanted to make. In this particular case we wanted to make glazed sewer pipes. We knew that the shale that we had would make a good pipe, but we were not certain as to whether or not it would glaze. We sent shale to a ceramic engineer and he tested it and produced a perfect salt glaze. Upon his recommendations we built a large plant but failed absolutely in producing the salt glaze, so since this experience we have never tested less than a car load of clay or shale before investing our money in a new plant.
>
> Some one ought to have brains enough to analyze the clay and determine whether or not it would make a merchantable product. Hundreds of thousands of dollars are wasted annually, due to the mistakes made in testing clays.

We submit the above letter without comment and leave it to our readers for discussion.

As to Cost Accounting.

From the secretary of the American Face Brick Association comes the following letter:

> I want to sincerely thank you for the strong article which appeared in the editorial columns of your issue of Oct. 21 on "Cost Accounting." Since we have gone so deeply into the subject, we feel that we have stirred up considerable interest in favor of keeping accurate costs, and we know that your editorial will greatly further the cause.
>
> R. D. T. Hollowell, Secretary.

Reference to the Questions and Answers department of this magazine, issues of Nov. 4 and the current number, will show that the matter of cost accounting is receiving a great deal of attention, as Mr. Hollowell says.

Finds Big Zinc Clay Deposit.

The following letter comes from J. C. Melcher, O'Quinn, Tex.:

> While hunting for limestone for the Southwestern Steel Development Co., of Texas City, I discovered what seems to be the largest and best zinc deposit in the United States. Thousands of carloads can be taken from open pits before mining underground. Large veins 16 feet thick show up in the creek and hillsides four miles from LaGrange and three miles from the railroad. These deposits consist of sulphate of zinc, white carbonate of zinc, white oxide of zinc and even a good deal of the hard clay matrix is rich enough to work for zinc. No leases have been taken because zinc workers do not know of the find.
>
> The Sebring Pottery Co., has leased all my kaolin. It may also take my fuller earth and feldspar recently mentioned in your journal.

Mr. Melcher is interested in the development of clays in Texas, and recently reported to this journal the discovery of kaolin, fullers earth and feldspar in Texas. We are glad to know we have been of some use to him.

Barr Clay Co. Buys 700 Cars.

The Nutting Truck Company has just delivered 700 of its standard roller bearing dryer cars to the new Bar Clay Products Company's plant at Wanamingo, Minn., where they have caused considerable comment, the criticism being very favorable to this type of car.

Trade Review

New York.

Brick throughout the East reflects the conservatism of business throughout the country. The markets in all centers in the vicinity of New York are barely steady, both in demand and price. Newark, for instance, is quoting $7.25 to $7.50, yard, on common brick, while the New York wholesale price for Hudsons is around $6.30, although the current range is quoted as high as $6.50, with an indefinite low range.

The unsettled price basis is due to the action of some manufacturers taking the sales into their own hands and quoting arbitrary prices. The action has upset the market, as shown in the firm quotation of Raritans at $6.25 to $6.50 in this market. At a recent meeting of some of the manufacturers from the Hudson district, there was some criticism of distributors for not advancing the price of brick early in October. The position taken by the manufacturers was that the early closing down made them short of money and that they needed the barges that were lying about in this harbor awaiting unloading berths, to load for new shipments into New York for covering. It was figured that if the present barge loads were sold they could make two more trips at least before navigation closed, even figuring two weeks lay-over on both voyages. Instead the prices stood still, or actually sagged, and this encouraged the hand-to-mouth buying policy that dealers have followed for some time.

But the distributors maintained that it would not have been good business arbitrarily to have advanced prices on a sick market, and they recalled that the very week that the advance was to have gone into effect the price of steel dropped a dollar or more a ton, proving conclusively that if steel could not hold its own in the construction market, brick, which had the disadvantage of splitting contracts, in many cases, with a competitive material in building operations (whereas steel had no competition), should not be advanced. It looked, however, around the first of the month that there would be a sharp change in quotations, but a further falling off in the demand for building material checked any tendency in that direction and prices stood.

In the meantime, manufacturers have undersold the market in cases where barges were scarce, with the result that some dealers have stacked to some extent on the general expectations of a sharp advance as soon as the local demand improves.

Face brick is also slow. Prices are not as stiff as a month ago on the $24 to $28 range, but there is little shading in this market, for the reason that practically no face brick is carried here on stock, but is ordered from the manufacturing plants in required lots. The paving brick market is proportionately more brisk than either common or face brick because of the large amount of public work pending. Prices are steady. Sewer pipe is not so active. In fact, it has given the lead in clay products activity in this market to paving brick, which is gaining strength on inquiry, due, in measure, to the campaign being waged by automobile owners against the use of oil on macadam and recommending the use of brick for roads and streets instead. Both New Jersey and New York are opening up encouragingly for this type of road paving.

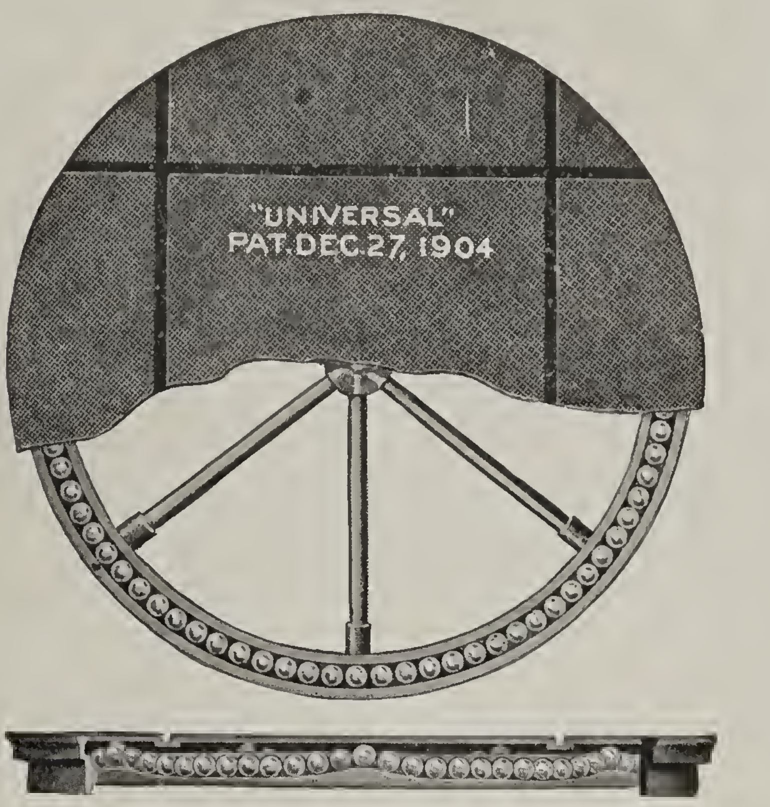
Flue lining is not especially active because of the falling off in general building, but conduits are reported to be in good demand. Hollow tile and block show a general steady movement, despite the drop in New York construction, about 35 per cent from last year's figures. Prices remain unchanged. Roofing tile prices are steady here. The best grade of roofing tile brings $25 per M. for run of kiln and $35 for selected. A cheaper form of tile with a smooth surface is being sold as low as $12. Spanish roofing tile bring $9 per 100 sq. ft. of roof.

The general business outlook for the Winter cannot be called bright, yet there are some things about it that militate against pessimism. The long continued slacking up in building construction is going to end in a grand rush to file plans, if the local political program now under way is carried out. That program consists in swinging the present membership of the Board of Aldermen into line to pass the new building code before the first of the year, because the incoming Board will be of such a radical change of political complexion that it will want to go over again all the work accomplished by the Herbst committee, thus putting off formal approval of a new code for almost a year. The present Mayor, whose term is that of the unexpired tenure of the late Mayor Gaynor, is said to be receptive to the plan of immediate action in the interests of good and safe building in New York, and the brick and clay products interests are said to be in favor of prompt action on the ground that the Herbst code seems to be as equitable as any that has come through the Board of Aldermen. If this code is rushed through before the first of January, there will be a big rush to file plans, and this will mean a good building movement in the early Spring, if the Winter proves too severe to start work earlier.

Philadelphia, Pa.

Building operations continue very brisk throughout the city and suburbs. In the city proper this wave of activity is most noticeable and extends to all lines of trade and business as well as to places of residence. Bids will soon be asked for extensive improvements to the Broad St. station of the Pennsylvania R. R., which will be one story in height, of fireproof construction, 80x150 feet in size, and to cost $300,000. Another improvement to be made by the same company will be the enlargement of the North Philadelphia station, which will involve an outlay of $30,000.

A large factory building to be erected, to cost $60,000, at Manayunk for the A. T. Baker Company, which will be of brick construction, four stories in height. Another large factory



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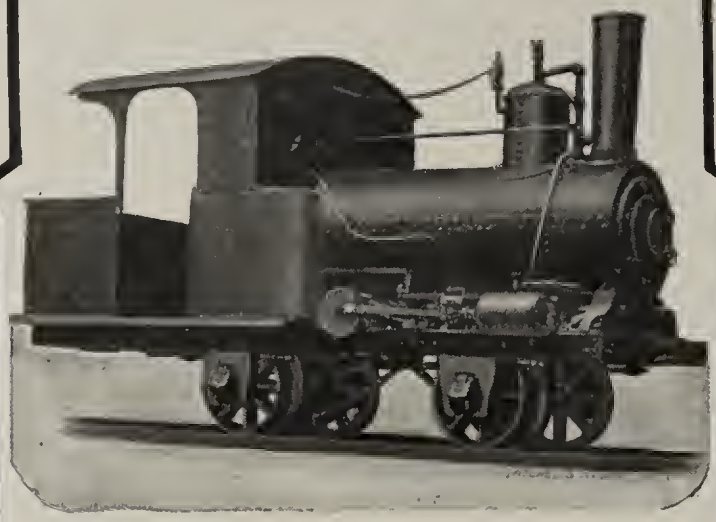

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building to be erected at 48th and Parkside Ave. for the General Flooring Company, to cost $40,000. Another large building is to be erected for Baxter, Kelly & Faust at Tioga and Amber St. to cost $35,000, also a very large extension to be made in addition to the large plant of H. H. Sheip & Co. at 6th and Columbia Ave. All these improvements are to be carried on during the present year.

Among the suburban operations that are being started and on which work will be pushed forward as rapidly as possible are at Jenkintown, Pa., where Robert Nicholson will erect a large hollow tile and plaster residence. At Meadowbrook extensive additions are to be made to the residence of P. E. Weber. At Elkins Park seven modern houses will be erected by the G. W. Elkins Estate.

That the expenditure for construction work in Philadelphia this year is likely to establish a new high-water mark is indicated in the outlay made for the ten months ending with October 31st, which reaches $35,374,205.

The record figure for any one year was created in 1909 when the aggregate was $42,000,000. To exceed this total, building work will have to be exceptionally brisk in the terminating two months, but several large structures and many important dwelling operations will be under way before the new year sets in, and will probably bring the figures up to the record mark. Approximately $10,000,000 of the total for first ten months was involved in dwellings chiefly of the two-story type, all built in the Northeastern and West Philadelphia sections of the city.

San Francisco, Cal.

The building business in the principal Pacific Coast cities slumped off rather badly within the last month, owing mainly to delay in letting contracts on work for which plans have been completed. Money is still tight, and building projects are not financed as easily as they should be under ordinary conditions. The local record of building permits fell to the lowest level of the year, $1,118,280, compared with $1,722,860 for October of last year. Oakland shows a slight gain, but is not above the recent average; while Los Angeles, which has been making records of $3,000,000 and more, has fallen to about half that figure. The records at San Diego and at Portland, Ore., are both below last year.

Locally quite a number of large jobs are in immediate prospect, making the outlook for the early months of 1914 fairly good. There was some delay about letting the municipal auditorium contract, as the figures exceeded the amount available, but the deficiency will be made up. It was proposed to substitute terra-cotta for granite facing, but this will not be done. The 12-story Hobart building will soon be contracted; an addition is to be built to the Crocker building; a large addition is being figured for the Metropolitan Life building, of white glazed terra-cotta; and a $600,000 hospital is to be built for the University of California next Spring. Local manufacturers also hope for some business from the million-dollar Bishop estate building in Honolulu.

Common brick dealers report no improvement in San Francisco prices, which are rather easy at $6.50 per M., with large accumulations at many nearby plants. As deliveries on some of the large contracts let this Fall will not begin until late in the Winter, there is no adequate outlet in this market, though the closing of several plants on account of rain this month relieves the pressure a little. Meanwhile the surplus is being reduced by comparatively heavy shipments to points up the coast, and to the Hawaiian Islands, where there is a very fair demand at present. In view of the large deliveries required in San Francisco next year, it is hoped that a better range of prices can be established before Spring.

The California Railroad Commission has upheld the complaint of the San Francisco Chamber of Commerce against the rates on clay moving into South San Francisco, East Oakland and Alameda as unreasonable, and ordered a reduction from $1.25 per ton to 85 cents. The clay is shipped chiefly from Amador, Placer and Calaveras counties. The reduction is of considerable importance to the Steiger Terra Cotta & Pottery Company at South San Francisco, the California Pottery Company in East Oakland, and N. Clark & Sons in Alameda, who get most of their raw material for the manufacture of brick, terra-cotta, sewer pipe, etc., from the localities mentioned.

W. W. Dennis, of the McNear Brick Agency, handling Ione fire brick, says the market has lately picked up in very good shape, after a long period of dullness, and the movement is now very satisfactory.

One of the most attractive displays made at the recent California Land Show in San Francisco was the clay products exhibit of the Los Angeles Pressed Brick Company. The pavilion for the town of Richmond, the location of the northern California plant, was roofed with this company's tile, and the company's decorative brick was used as bases for the pillars. Inside was a fine display of Richmond red pressed brick, which are very popular in this market, and of floor and mantel tile, etc. The display was in charge of the United Materials Company, San Francisco agents. The Richmond pavilion also contained a fine display of porcelain plumbing goods, made by the Western States Porcelain Company. There are now two plants at Richmond turning out porcelain sanitary goods.

The Vallejo Brick & Tile Company's plant at Vallejo, Cal., has closed for the winter since the rain started, as it has been too muddy to work to advantage, and the company has enough stock on hand to last for some time.

Louisville, Ky.

The extreme slowness of the season in the building line has been reflected among the brick manufacturers in this vicinity, none of whom have had any great volume of business during the Fall. The amount of building done during the past two months is considerably below that of last year, and the brick men have not had anything to boast of in the way of business in consequence. The few large orders filled during the past few months are about at an end, and save for a few small residence jobs, there is nothing more in sight for the rest of the Winter, indications of severe weather adding to whatever other factors there are, that are responsible for the marked disinclination to build which is noticeable among owners of property generally.

In view of the condition of the trade, it is the intention of most of the manufacturers in this section to close down for periods varying from two or three weeks to a month or six weeks, beginning with Christmas and extending into and through January. There are ample stocks on hand to carry them through that period, any shortage which may be experienced by one manufacturer being supplied, according to the plan indicated, by others with plenty on hand. By the end of January it is hoped that things will have livened up somewhat, so that manufacturing can proceed with something definite to go on.

Labor conditions have been perfectly satisfactory among manufacturers in the Louisville territory, no hint of trouble being heard. The car shortage which is usual at this season, and which is noted with some apprehension in the coal trade, for example, has not affected brick men to any extent this Fall, on account of the comparatively light movement of brick. If there were greater activity in the building trades the lack of rolling stock might be a great deal more serious than it now appears.

Makers of sewer pipe, tile and other clay products are not in any better case than the brick manufacturers, although there is a great deal of sewer work going on in Louisville and Lexington, the two largest cities of the State. This is not sufficient to keep the several local plants constantly busy, however, and there seems to be little work going on elsewhere. The slack demand for hollow tile, of course, is due to the same causes, which have made things slow with the brick people—the comparatively small volume of building going on.

Louisville brick manufacturers recently bid with considerable eagerness on the contract for the material to be used in the construction of a new distillery and warehouse for the No. 1 Distillery Company at Twenty-eighth and Broadway. This job is a very desirable one, in view of the present dullness in the trade, as it will take in the neighborhood of a million common brick. The contract has not yet been let, however, and the brick men are eagerly awaiting some announcement in the matter.

Owen Tyler, handling various lines of high grade building material in this territory, reports that the demand for brick is very light at this time. A good many small orders are coming in, but the big business has disappeared for this season. A recent order for 10,000 white enameled brick by the Capital Lumber & Manufacturing Company, of Frankfort, Ky., for use in a building under construction in that city, was a fair specimen of the kind which are being booked now. Another order recently received from I. W. Beauchamp, a contractor at Taylorsville, Ky., was for 12,000 Hy-Tex brick for use in a bank building at that town.

The East End Brick Company, which has conducted a very successful business at the plant formerly operated by the Falls City Brick Company, has about used up the available material at its present location, and will be ready to move when its lease expires in July of next year. Nothing definite has been decided upon with reference to the move which will be made, but if no other good location presents itself, it is intimated by the company that it may join forces with the Hillenbrand Brick Company, the head of which is the father of the Hillenbrand brothers, who control the East End company. If this is done it is understood that a new upright kiln of 400,000 capacity will be built to handle common brick, and two down-draft kilns for making all special face brick, each with a capacity of 250,000.

The Hillenbrand Brick Company is operating four kilns with a capacity of 400,000 each. The company has had an excellent business this Fall, considering the rather slack demand, and has practically no reserve stocks on hand. A kiln will be finished in a day or so, however, giving a plentiful supply for present requirements.

Columbus, Ohio.

Shippers of clay products from the Central Ohio district still complain of scarcity of labor and of the car shortage. The former condition is growing more and more critical as the Winter approaches and, while the manufacturers do not feel that they can add to present costs by increasing wages, they feel that they may come to it in the near future. Despite expert figuring, which shows a constantly increasing labor cost, and no corresponding increasing output, it stands to reason that a force stronger than any labor organization is at work in the Ohio field—a force that will inevitably make brickmakers pay extravagantly high wages. Just as surely as water seeks its own level, so does labor in times of industrial prosperity, seek employment that is congenial, or easy, or well paid. This leaves the more uncongenial, hard, and poorly paid industries to face an industrial crisis that can be met only by radical changes in conditions of labor, and in the wage scale.

The potters are feeling the result of these conditions at the present time, the plants that have established comfortable conditions and divisions of labor that have made it almost impossible for an employee not to have a full pay envelope, are running full time; the potteries that have neglected these important points are closing down for lack of help. It is a "condition, not a theory" that confronts the Ohio clay product manufacturer.

Much of this is due to the activity of the labor element in the Constitutional Convention held in Ohio during 1912, and it is feared that it will cause the moving of some Ohio plants to states where the employer of labor is not subjected to so much competition. He has enough of the latter to meet in the sale of his product, without being compelled to meet it when he employs his help.

Both plants of the Federal Products Company, located at Mineral City, Stark county, Ohio, are in operation in the face of the strike of 125 former employees. Workmen have been imported and they are housed and fed inside of the plants.

WRIGHT HOISTS MINIMIZE CLAY PLANT ACCIDENTS

The cost of maiming an employee is greater than the cost of providing for his safety

Moving machinery by muscle is poor economy

STEEL HOISTS NEVER BREAK

STEEL HOISTS NEVER BREAK

Wright Standard
High Speed Hoist ½ to 20 Tons

Shortens Shut Downs, Time on Repairs, Shifting Dies, Moving Machinery

Prices are Surprisingly Low, Quality Considered

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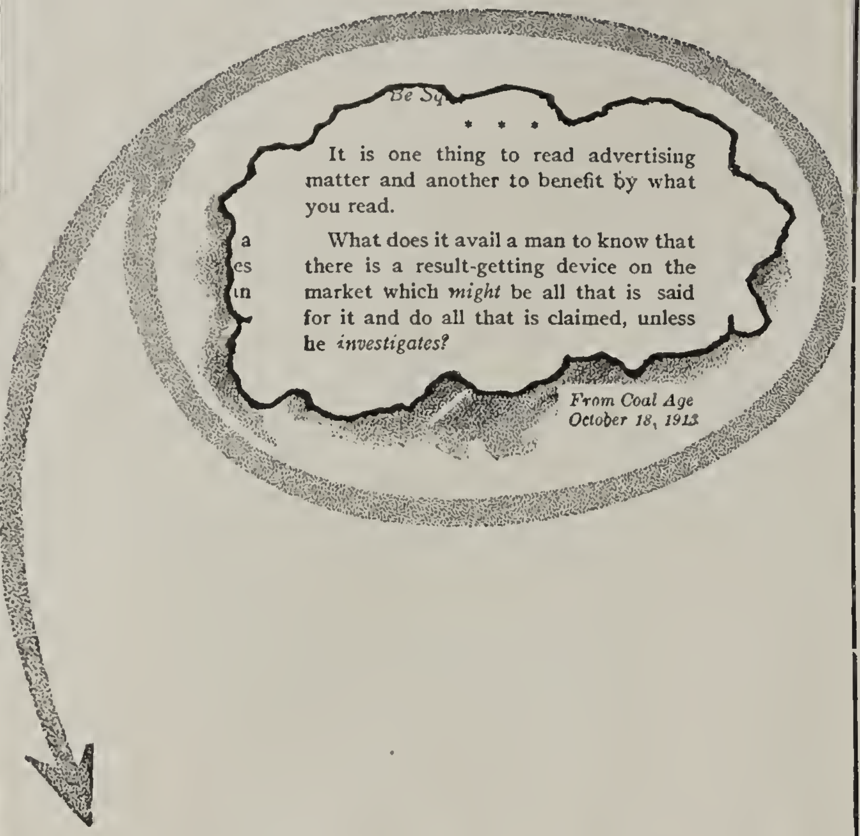

* * *

It is one thing to read advertising matter and another to benefit by what you read.

What does it avail a man to know that there is a result-getting device on the market which *might* be all that is said for it and do all that is claimed, unless he *investigates?*

From Coal Age October 18, 1913

Goodrich LONGLIFE CONVEYOR BELT

Reduces brick plant tonnage costs the same as it lowers conveying expense in other industries.

Investigate!

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Makers of Goodrich Tires and Everything That's Best in Rubber

Factories: Akron, O.

TRADE MARK

Branches in All Principal Cities

There is nothing in Goodrich Advertising that isn't in Goodrich Goods

According to Secretary Davy, most of the striking employees have sought other employment and the imported men will likely be retained.

As a result of the decision of Attorney General Hogan of Ohio, to the effect that road making materials manufactured by prison labor cannot be sold in the open market, many municipalities are preparing to make separate contracts for materials for street and highway improvement. By this decision, brick can be made in prison and the board of administration can dispose of them to any political sub-division, but not to individuals or firms. Generally speaking, manufacturers of paving brick are not strongly opposed to their manufacture in the Ohio penal institutions, as they believe in giving the convicts something to do, and are not inclined to be as selfish as many other industries have shown themselves to be.

The county commissioners of Washington County, Ohio, have announced that the roads in that county are to be paved with brick, and that State aid will be given. The decision to use brick was reached after a thorough investigation of road building materials.

In order that it may better handle its rapidly growing business, the Findlay (Ohio) Clay Pottery Company will soon start the erection of another kiln, the capacity of which will be three times that of the present kiln, besides being built on more modern lines.

In order that the liabilities of the company may be adjusted and the corporation dissolved, the property of the Chillicothe Fire & Pressed Brick Company, consisting of six tracts of land located seven miles west of Hamden, Ohio, will be offered for sale November 26. The land lies in the new oil region extending from Adelphi and is said to be underlaid with valuable coal and clay deposits.

Kansas City, Mo.

The brick situation is in unusually good shape in Kansas City, due largely to open weather, which has allowed contractors to work without cessation and brick manufacturers to maintain continuous operations. Demand is very good, considering the season, and many of the Kansas City plants will work throughout the Winter, weather conditions permitting. Several are securing clay close to the surface and will necessarily halt work with the appearance of freezing weather. Others are digging far below the surface and will not suffer materially from the advent of colder weather. A number of brick contracts of importance are in sight, and prospects are for an exceptionally brisk Winter with brick men.

Recent orders from Panama have featured a satisfactory month with the W. S. Dickey Clay Manufacturing Company, of Kansas City. The Government has continued to order both fire-brick and sewer-pipe in quantities, and it was stated by Manager G. H. Tefft that requisitions will not stop with the turning of water into the big ditch. The Government still has a lot of work to do and will be in the market for some time. While Government business is not of the most desirable class, because of the unusual terms on which it does most of its buying, the Dickey Clay Manufacturing Company has been fortunate in handling this in many instances. The Government makes the brick manufacturer assume all responsibility for accidents in shipping, buying f. o. b. Panama. The loss by accidents is said to run as high as 25 per cent in a number of cases.

The W. S. Dickey Clay Manufacturing Company has been sued by the New Orleans & Northeastern Railroad for a sum slightly over $500, the case being a rather peculiar one. The railroad company paid the amount involved to a steamship company at New Orleans on a shipment from Nashville, Tenn., to Panama. The railroad had no authority to pay the sum, which is said to represent an undercharge. The road looked to the Kansas City company for a refund, which naturally was not forthcoming under the conditions.

George H. Tefft announced that an executive meeting of the National Clay Products Bureau will be held in Chicago late in November, the exact date not yet having been announced.

The hollow-tile business is being featured successfully by the Coffeyville, Kas., Shale Brick Company. The concern recently announced that it would discontinue brick manufacture and would devote all of its time to tile. The latter is being pushed aggressively with good results.

On summing up the year's business, a strange situation was found to prevail, according to F. C. Lafountain, Kansas City manager of the Kansas Buff Brick & Manufacturing Company, of Coffeyville, Kas. The two extremities of the company's territory, Texas and Minnesota, provided the heaviest volume of trade during the past year. A number of changes in agency territory were made recently, which, it is believed, will give better results. Compact areas will be the rule in the future, each agent being restricted to a certain territory within striking distance of his headquarters.

About 3,000 square feet of brick paving is to be laid at Topeka, Kas., in connection with the completion of the new Union Pacific freight depot at that point, according to word received by Kansas City paving brick men. The work will cost approximately $6,000. The pavement will be 42 feet wide and several hundred in length. Two layers of brick are to be used, because of the heavy traffic along the street.

Included in the numerous contracts secured recently by the Kansas City office of the Hydraulic-Press Brick Company is one calling for the new warehouse of the J. I. Case Threshing Machine Company in Kansas City. More than 500,000 face brick and 2,000,000 common brick will be required in the work.

J. P. Turpen, representing the Cleveland (Okla.) Vitrified Brick Company in Kansas City, has secured an order for 40,000 face brick for the new Jones building at Ninth and Locust streets, Kansas City. Mr. Turpen, who has been in Kansas City only for a short time, succeeding F. W. Clyatt, has spent his time in getting acquainted with contractors and architects, with good effect. The company's future policy will be to handle its output through its own men as much as possible. E. B. Wentworth, who is now located at Oklahoma City for the Cleveland company, is getting a good volume of business.

Freight Tariffs

In the last issue of "Brick and Clay Record" the question of submitting claims that had been refused by the railroads was discussed and a suggestion made that, when shippers were dissatisfied with the position taken by the carrier, the claim be handed to some one who made a business of prosecuting these claims before the Interstate Commerce Commission. It is a common error that railroads resent these actions. On the contrary, they are, as a rule, very willing that the matter should be adjudicated by a proper authority.

To begin with, no railroad wants its shippers dissatisfied. And, since an honest difference of opinion may exist between those shippers and the carrier at any time, it is better for both parties to thrash the matter out in the open, than to have one of the parties interested feel that he is being treated with any lack of consideration.

As to the question of rate, it is our opinion that the average shipper is not so much interested in the rate itself, as he is in wanting his shipping point being given the same advantages in the matter of rates, as are the shipping points of his competitors. In other words, he asks that either his rate be lowered, or that of his competitor raised. Consequently, if there be an unequal rate situation which requires consideration by the Interstate Commerce Commission, the claimant stands for a "fair deal" all around, to himself first, the carrier second, and his competitor third. In this controversy, the carrier, against whom the claims seem to lay, is a willing party, since it may result in a raise in rates, instead of a decrease.

A prominent firm of traffic experts in Washington, D. C., writing on this subject, says:

"In many such cases—and we have handled a number where a good many thousands of dollars were involved—we have found it possible to arrive at an agreement, by presenting to the railroad companies the facts of the matter, and, after looking over the rate situation as on file at Washington, and citing to the railroad companies the rulings of the Interstate Commerce Commission in parallel cases, found the transportation companies as anxious to bring about proper conditions, as were the shippers to have them established."

There are cases, of course, where the railroad companies and the shippers are both obstinate, and where the only recourse is to bring the questions in controversy before the Commission. But the old theories of doing business are passing away and the idea of settling contentions "out of court," when it can be done legally, is growing in favor.

The feeling of the small shipper, that a heavy expense is involved when questions are brought before the Commission, is entirely wrong, for many matters are brought up informally, and while the disposition of these small claims set precedents upon which many large differences are predicated, the expense of the initial claim is very slight, when compared to the satisfaction of winning out on a question of principle.

The following tariffs, with one exception (marked), have become effective since our last issue:

From Eastern Points

From Blue Brick Siding, S. C., Brick, to Dunn, N. C., $2.00 per M. brick; to Fayetteville, N. C., $1.85 per M. brick; to Goldsboro, N. C., $2.00 per M. brick.

From Kaulmont and St. Marys, Pa., Clay products, to Erie, Harbor Creek and North East, Pa., 6.6c per cwt.

From North Oxford, Mass., Common brick, to Chelmsford, Mass., 7¾c per cwt.; to Fall River, Mass., 8½c per cwt; to Falmouth, Mass., 9.35c per cwt.; to Pawtucket and Providence, R. I., 6¾c per cwt.

From Saylorsburg, Pa., Enameled brick, to Boston, Mass., 15.2c per cwt.

From Middle West Points

From Bloomingdale, Ind., Broken fire brick, to Terra Cotta, Ill., 8.1c per cwt.

From Drake, Ill., Louisiana and Vandalia, Mo., Brick and articles taking the same rates, to Westfield, Ind., 7.4c per cwt.; to Oxford, Ind., 8.1c per cwt.; to Princeton, Ind., 6½c per cwt.

From Western Points

From Gallup, N. M., Common brick, to Albuquerque, N. M., Adamana, Holbrook and Winslow, Ariz., 10c per cwt.; to Canyon Diablo, Flagstaff and Williams, Ariz., 12½c per cwt.

From La Junta, Colo., Brick to Las Vegas, Santa Fe and Albuquerque, N. M., 20c per cwt. (Effective Nov. 22.)

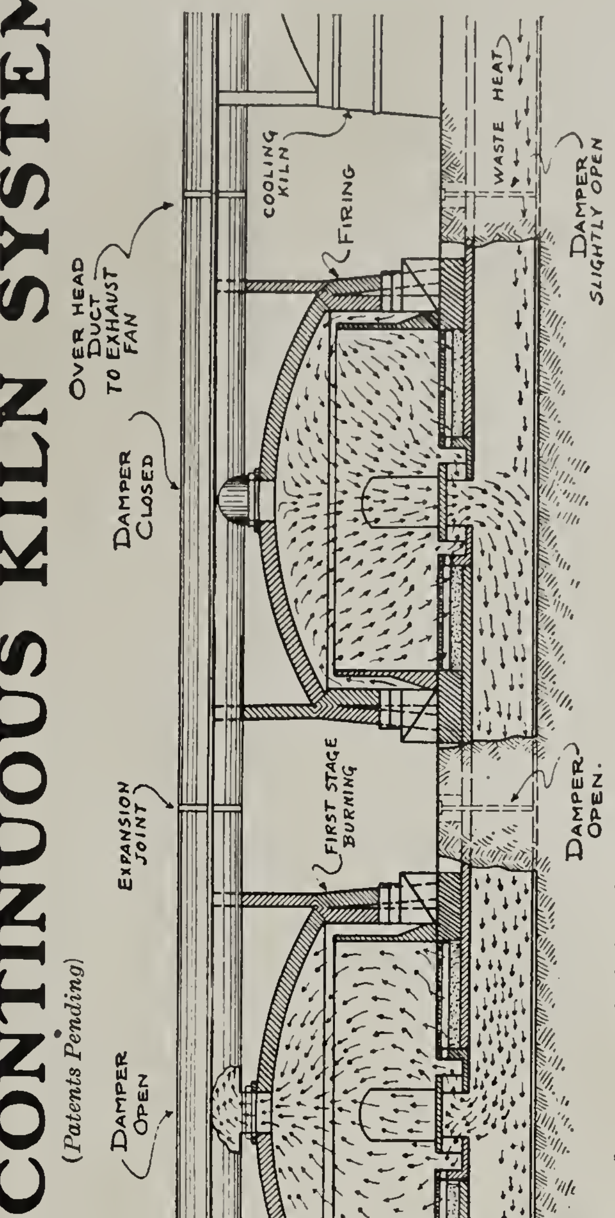
From St. Louis, Mo., Fire brick, to Florence, Neb., 7½c per cwt.

Denies Rate Increase.

An increase in rates on brick from the Hocking, Shawnee and Zanesville groups in Ohio over the Toledo & Ohio Central and Zanesville & Western, and the Kanawha & Michigan railroads to Huntington, W. Va., was denied by the Interstate Commerce Commission. The increase in rates proposed by the railroads, which in some instances amounted to 20 per cent and in other cases to a reduction of about 5 per cent from 12 cities in Ohio, was held to be not justified. It was contended that in order to preserve "group" adjustments and obtain proper remuneration for services rendered, the rates should have been approved by the commission.

THE SCHAFFER SEMI-CONTINUOUS KILN SYSTEM

(Patents Pending)



The Schaffer Semi-Continuous Kiln System consists of an overhead duct and an underground tunnel arranged in such a manner as to make the operation of the round down draft kilns continuous.
It gives the same fuel saving as the regular continuous kiln, but is much more simple to operate.
It produces a much higher class ware than is produced in either the continuous or periodic kilns.

SEECO SYSTEMS applied to your round down draft kilns will save you $1,000 per year on each kiln by taking your heated gases to the next kiln ahead, instead of out to the stack.
This is only one point of advantage.
There are many others, if you will ask us to explain.
Seeco Systems Secure Success in Old Plants as well as new.

THE SCHAFFER ENGINEERING & EQUIPMENT CO. (Incorporated), TIFFIN, OHIO

CHICAGO BRICK MACH'Y CO.
UP TO DATE MACHINERY
CHICAGO, U.S.A.

Elwood Dry Press
Auger Brick Machines
Down Delivery Tile Mills
Oil Burning Equipment
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Piano Wire Screens
Dry and Wet Pans
Soft Clay Brick Machines
Pug Mills
Wet and Dry Clay Disintegrators
Smooth and Conical Roll Crushers
Wood Moulds
Trucks and Barrows
Kiln Fittings

If you are in the market for any of the above we will be pleased to quote you.

Catalogs upon request

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20 W. Jackson Blvd. Chicago, Ill.

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Of Clay Products Machinery Manufacturers

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Richardson-Lovejoy Eng. Co.

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Broderick & Bascom Rope Co.

Automatic Cutters.
(See Cutters.)
Barrows and Trucks.
American Clay Machy. Co.
Berg. Machy. Mfg. Co.
Bonnot Co.
Brewer & Co., H.
Chambers Bros. Co.
Chicago Brick Machy. Co.
Electric Locomotive & Car Co.
Fate Co., The J. D.
Freese & Co., E. M.
Lansing Co.
Manufacturers Equipment Co.
Martin Bk. Mach. Mfg. Co., H.
Ohio Ceramic Eng. Co.
Potts & Co., C. & A.
Raymond Co., The C. W.
Steele & Sons, J. C.

Barytes, Carbonate of.
Roessler Hasslacher Chem. Co.

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American Fabric Belting Co.
Berg Machy. Mfg. Co., Ltd.
Gandy Belting Co.
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Imperial Belting Co.
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American Blower Co.
Berg Machy. Mfg. Co., Ltd.
Manufacturers Equipment Co.
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Rodgers Eng. Co., L. E.
Trautwein Dryer & Eng. Co.

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(See Engines and Boilers.)
Brick-Handling Machinery.
Mathews Gravity Carrier Co.

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Berg Machy. Mfg. Co., Ltd.
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Eastern Machy. Co.
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Freese & Co., E. M.
Jackson & Church Co.
Manufacturers Equipment Co.
Martin Brick Mach. Mfg. Co.
Ohio Ceramic Engineering Co.
Potts & Co., C. & A.
Raymond Co., C. W.
Steele & Sons, J. C.

Brick Machines (Dry Press).
American Clay Machy. Co.
Berg Machy. Mfg. Co., Ltd.
Chicago Brick Machy. Co.
Raymond Co., C. W.

Brick Machines (Soft Mud.)
American Clay Machy. Co.
Eastern Machy. Co.
Manufacturers Equipment Co.
Martin Bk. Mc. Mfg. Co., H.
Potts & Co., C. & A.
Raymond Co., C. W.

Brick Machines (Stiff Mud.)
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Brick Recutter.
Raymond Co., C. W.

Brick (Building).
Marion Brick Works.
Purington Paving Brick Co.

Brick (Fire).
Chicago Retort & Fire Bk. Co.
Davis Fire Brick Co.
Dover Fire Brick Co.
Evens & Howard Fire Bk. Co.
Federal Clay Pro. Co.
Maurer & Son.

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Barr Clay Co.
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Big Four Clay Co.
Cleveland Brick & Clay Co.
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Brewer & Co., H.
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Gerlock, H. W.

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MODEST GARAGES OF BURNED CLAY

5

BRICK and CLAY RECORD

WILLIAM D. GATES

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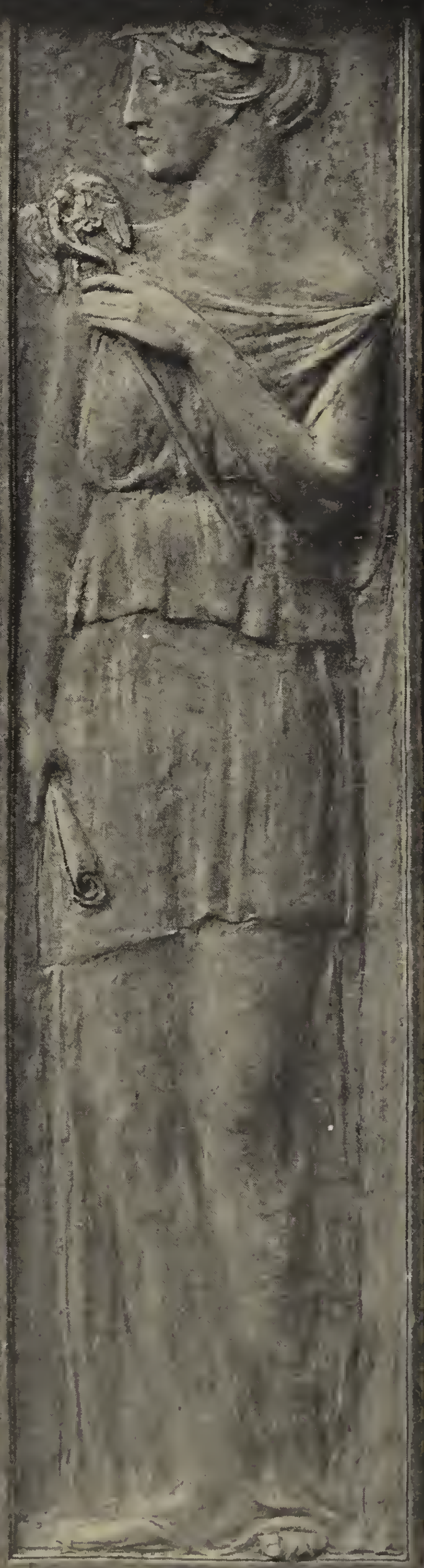

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You can do it with

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Waste heat is as good for drying as any other heat, provided it is harnessed up properly. A "Sirocco" Fan is the harness by which an otherwise wasted element is put to work.

A Sirocco Fan can deliver more air with less power than the ordinary steel plate fan twice the size.

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AMERICAN BLOWER COMPANY

DETROIT, MICHIGAN, U.S.A.

BRICK and CLAY RECORD

Brick Established 1894

Clay Record Established 1891

A SEMI-MONTHLY RECORD OF THE WORLD'S PROGRESS IN CLAYWORKING
PUBLISHED ON THE FIRST AND THIRD TUESDAYS IN EACH MONTH
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The Editor's Corner

A Department Wherein is Set Apart Comment and Opinions on Some of the Graver Problems Confronting the Clayworker and Co-Laborers

NEW ORLEANS is to get the Twenty-eighth Annual convention of the National Brick Manufacturers' Association. This was determined when the mail ballot conducted by the Executive committee was counted by Secretary Theodore Randall and found to be in favor of the Crescent City.

Because of the reputation the southern metropolis has for its hospitality and its many known sources of amusement, there is every probability that one of the largest attendances in the history of the Association will be present when President W. H. H. Rogers strikes his gavel on the morning of the opening session.

New Orleans—especially in the Winter months, is one of the gayest cities in all America. With its warm, summer-like atmosphere, its easy accessibility from all sections of the country and the spirit of enjoyment that permeates everyone, from the time that the chill of the Northern Winter sets in until the balmy Spring comes the season is one of carnival, the climax being reached during Mardi Gras week.

The week following the close of Mardi Gras—March 2-7, has been selected for the convention and the visiting clayworkers will not complain of ennui one single moment during their stay in the city.

Mardi Gras lasts two weeks and there probably is no other city in the world where the spirit of good cheer is shown to such a degree as it is in New Orleans during the carnival. Gorgeous parades, in which elaborately constructed floats and quaintly costumed revelers take part; masque balls, which the elite of the city attend and many entertainments add to the pleasure of the fun-makers.

Then there is the side trips to Panama, the present-day glimpses of the old Spanish and French colonial grandeurs, the coffee houses, the many historical sight-seeing trips.

The Ancient Order of Chaldeans, the new secret society among the clayworkers, which was organized at the Chicago convention last year, is going to add its mite in the entertainment program. The Supreme Temple will hold its first annual session and a New Orleans Temple will be instituted, followed by a banquet and cabaret show.

The Convention of 1914 should be one of the best ever held and clayworkers will do well to so arrange their plans that they can be in attendance.

* * *

HOW do you follow up your complaints? When a customer complains that your product is not what you promised him—that delivery was not made as agreed—that your salesman did this or did that—what do you do?

Complaints come in to all of us—they are as inevitable as Death itself. Some of these are from chronic kickers and are unreasonable. Others are from men who have, or believe they have, just cause.

Some brickmakers are prone to take snap judgment on kicks. If they know they are right and the customer is wrong diplomacy and tact are thrown to the winds and the customer is handled without mercy.

It is a safe rule to treat all customers—the chronic kickers and the just ones, alike.

It also is a safe rule to treat them with courtesy, listening patiently and never arguing the point one way or another.

A retail clothier in Chicago—Maurice Rothschild, has builded one of the greatest establishments of its kind in the world and the rule he thinks most of is the one that pertains to the treatment of a disgruntled customer.

"Settle first—investigate later," is this clothier's slogan.

The writer recently was in this store when a customer came in to make an exchange of an article which he had purchased several weeks prior. The salesman, who recalled that this was the second time this same customer had made an exchange on the original purchase forgot the slogan and his patience and spoke very frankly to the customer.

The customer took the matter up with the manager, who called the salesman up before him and the customer and asked him this one question:

"What is the cardinal principle of this store?"

"Money back first—investigate later," was the reply.

Without another word the salesman was discharged in the presence of the customer.

This may be rather a severe treatment for the clerk who was prompted by what he had considered was for the best interests of his employer, but he had infracted one of the most positive rules of the store and his discharge before the customer certainly must have made an impression that was imparted to more than one of that customer's friends.

Make it a point to be just as eager to correct errors as you are to sell your brick. It may prove a little expensive here and there, but you will soon learn to be more careful and, after all, in the long run, you will find it more profitable.

* * *

BAKING CLAY and baking bread are very similar in many ways—you have to understand how to do both before you can get good results. And no first-class chef would think of trying to guess at a certain mixture for a choice dish than would a first-class clayworker think of guessing in his business.

But chefs do guess and so do clayworkers and that is why we hear so many complaints at both the dining room table and in the business office of the clay plant.

Usually the clayworker fails to learn until he has got in trouble and—like the ninth stitch, it is the most expensive time to get the information that should have been obtained long before.

Clayworking is a matter of knowledge—not knack. Any intelligent man may be a good clay worker if he will only apply himself to learning.

The business is made up of recipes and formulas. There are set rules for everything and when these are applied in the right way at the right time good products are the result.

There are so many excellent books published on the various branches of the clayworking industry—so many valuable treatises and these may be obtained at such a reasonable price it is a wonder that there is ignorance.

Buy books and read them these winter evenings. You will find every hour you spend with these companions the most profitable of the entire year.

* * *

THERE were two brick plants in a small community—one was conducted by a local capitalist who knew little or nothing about brickmaking, the other by a man who had been raised in the business.

The local capitalist became possessed of his plant through the inability of its original owner to meet certain financial obligations. He went out to take a look around one day and turning to his superintendent he expressed surprise that the grounds were so unattractive and that the buildings were in such poor repair.

"You can't make a parlor out of a brickyard," was the answer he received.

The capitalist did a little thinking. And, as a result of that thinking, he gave a few orders to his men. One of these was to have a brick-paved driveway from the public road around his plant. Another was to clean up the yard and put the tumble-down buildings in repair.

He figured that his place was a place of BUSINESS—not a scrap yard. How could one invite an architect or a contractor to a plant that looked like that?

The business man proved his business sagacity when he got the place in presentable shape by asking every architect in the little city to come and visit his plant and see just how the material was made which they used. As a result of this invitation he received an order that was sufficient to keep his plant running full capacity the rest of the season.

A "good front" is worth while in clay plants as well as with human beings. Most persons judge us by our appearance.

Gates—He Sits for a Photo

Brother Chaldean Gives Distress Signal and Leads Him Gently to Camera Man—A Feat that Has Been Tried Without Success for These Many Days

EVER since William D. Gates has been in the public eye—and that period begins with the very moment he ceased to be a beardless youth and he decided to become a beardless man and turn his attention to making a living—ever since that moment, editors, friends, relatives and others, for one reason or another, have sought to obtain a "recent photograph" of his kindly, good-natured face. For one reason or another—none of which are known to any of the editors, friends, relatives or others, William D. Gates good naturedly, but firmly, has refused to grant these numerous requests.

Appeals have been made through friendship — through politics — through business pulls—through every known agency without success—until now.

William D. Gates was approached from a different angle this time. He was known as a man of great brotherly love—a man possessing more than the average man's tenderness for his fellow men—a man in whose breast the milk of human kindness flowed freely. And so these excellent traits of his were taken advantage of and he was approached on his "blind side," as it were. Brother Gates is a Chaldean—in fact he is the FIRST Supreme Venerable Nebo of the Supreme Temple of this hustling bunch of clayworkers—the Ancient Order of Chaldeans, and so a fellow Chaldean approached him and that Chaldean gave the distress signal and Gates—true to his Chaldean teachings and true to his own bubbling fountain of brotherly love, gave a willing ear and was led gently, but directly to the man with the camera and that man saw in the friendly smile something that "all men like" and he adjusted his instrument and at just the psychological moment, squeezed the bulb and the geniality of the man was indelibly impressed upon the sensitive plate. We refer you to the first outside cover for the proof thereof.

There is more than one reason for running this biography of Mr. Gates and the portrait. Of course, the fact that the biographer has achieved something no other living person has been able to do—secure a "recent picture"—is, in itself sufficient. But Mr. Gates is also Supreme Venerable Nebo of the Chaldeans, who are going to be much in evidence at the New Orleans convention. He is also secretary of the National Terra Cotta Society. He is also an ex-president of the National Brick Manufacturers' Association. He is the man that has made Gates Pottery famous and last, but not least, he is William D. Gates—a man of the most generous nature, who looks on the sunny side of life—who gets more enjoyment out of existence by making his fellow men laugh than in any one other thing he does and any one of these things ought to be sufficient excuse.

Much could be said about Friend Gates—more than the limited space of this page would permit, but why any of it? There is not a reader of this magazine that does not know the many-sided nature of the man—of his charity—his generosity—his sunny disposition—his success in the business world—his happy family life—his lasting, unselfish friendship to those he loves in his large circle of intimates.

We all KNOW him—there is nothing that could be said here by the biographer that would add one whit of knowledge or that could increase the great esteem or magnify the affection that is held for him.

Gates is just Gates—and that is enough to be written. May he live long and continue to eminate the balmy rays of his sunny disposition. May he have no more care than today.

In New Orleans there is much to be seen by the tourist or visitor — beautiful drives, elegant homes in bowers of foliage —the French Quarter and Garden District.

The scene at the left is a tropical bit in the Garden or American District of New Orleans. Nothing more entrancing is imaginable than views like these.

New Orleans the Mecca for N. B. M. A. in March

Executive Committee Selects Quaint Southern City for 1914 Convention

FOR the sixth time in its history the National Brick Manufacturers' Association will hold its annual session in a Southern city, New Orleans, having been chosen as a meeting place for the Twenty-Eighth Convention which will be held March 2-7, the week following Mardi Gras week. The selection of the Crescent City followed a mail vote conducted by the Executive committee, more than three times as many votes having been cast for that place than for any other one city seeking the distinction. Indianapolis is said to have been second on the list and Buffalo third.

It is proposed to make this one of the largest attended meetings of the parent body. The fact that the Convention follows the last week of the Mardi Gras undoubtedly will take many to New Orleans that would not have attended a convention in any other city as they will be able to attend these annual festivities by making the trip a few days in advance.

The special trip to Panama also will encourage many to take advantage of this opportunity to combine a little business with a lot of pleasure and enjoyment.

The Ancient Order of Chaldeans, the newly organized secret society among the clayworkers, will furnish another contributing cause for a better attendance as it will run a special Chaldean train from Chicago, picking up Chaldeans and their friends at various points along the line.

New Orleans is said to be like no other city in the world, linking as it does the old and new, with a dash of modernity and a trip of the ancient here and there. It has a clime, like its people, genial, its winters being semi-tropical in nature, and now that the Panama Canal has developed a new incentive for tropical travel, the Crescent City will become the gateway for thousands of tourists.

When the clayworkers reach New Orleans they will find the last week of the famous Mardi Gras just closing and the ushering in of the winter social season. The

An Old Courtyard in the French Quarter.

French Grand Opera will be on, the old French historical quarter will be a scene of life and gayety and there will be the semi-public balls and the other popular entertainments that follow the wake of the Carnival.

The Old French Quarter probably is the most interesting locality of the city. It is that portion of New Orleans that was developed under the French and Spanish regime. Some of the most interesting streets are Royal, Chartres, Decatur, Bourbon, Burgundy and Rambert streets. Then there are Iberville, Bienville, Conti, St. Louis, Toulouse. St. Peter, Orleans, St. Ann, Dumaine, St. Phillip, Ursulines and Hospital streets.

A trip through the Quarter will prove more interesting than to any of the oldest European cities, for little of modernity has touched the ancient buildings and edifices, some of which stand today just as they were nearly two hundreds years ago.

Royal street and its nest of unique little stores will prove a source of entertainment to the visiting clayworker. One can find many little novelties in these stores—novelties that can be bought nowhere else in the world. Lovers of rare books, antiques and curios can revel in their fads.

Among some of the interesting sights in the Quarter are the Hotel Royal, a famous landmark of ante bellum days; Sieur George's of Cable romance; St. Louis Cathedral, first built in 1721 and rebuilt three times, the present edifice being completed in 1749 and remodeled in 1850.

On either side of the Cathedral are the old public buildings erected under the Spanish regime, now occupied by county officials and the police.

Not far from these two landmarks is the famous French Market, a group of buildings devoted to the sale of fruits and vegetables, meats and fish and dry goods and notions. This will be one of the rare treats of the visitor and undoubtedly a liberal share of his time will be given to this section. of the Quarter.

Among the other points of interest in this locality is the Archbishop's palace—the oldest house in Louisana, being built in 1727 as a convent. Just across the street from this edifice is the former home of General Beauregard. Then there is the famous "Haunted House," the home of "Madame Delicieuse," the French Opera House, "The Absinthe House," and many other places equally as interesting.

The French Quarter is not the only place of interest in New Orleans. There are many public buildings that will be a source of admiration and surprise to the visitor. The great Mississippi River levee with its immense shipping facilities and the parks and driveways are always of interest.

Then there is the American or Garden District. This section is located in the Southern part of New Orleans and has much to attract the eye and with its distinct southern characteristics will prove of unusual interest to the clayworker whose home is west or north of the Maosn and Dixon line.

Many public buildings of note are located in this section and some of the handsomest homes in the fair south with their beautiful lawns, bordered in semi-tropical plants, are to be seen in St. Charles Avenue, a seven-mile long street, beautifully shaded and representing the aristocratic features of the American Quarter. Audubon Place, Jackson Avenue and Prytania also are among the finer residence streets.

In going about the city one will come upon several statues, the significance of which will not be apparent without explanation, but which are interesting in connection with their story.

The Lee Monument, and the Jackson, Franklin and Henry Clay statues need no explanation as to their being, but the following may be noted of them in passing.

The Henry Clay statue was designed by Joel T. Hart

In the "Garden" District of New Orleans.

In Bourbon Street, French Quarter.

and was erected in 1850. Until 1901 it stood a prominent landmark on Canal Street, at the junction of St. Charles and Royal streets. Being thus located in practically the center of the city, it has figured from time to time as a rallying point for mass meetings of the people.

The Franklin statue is by Hiram Powers, and was presented to the city and erected in 1872.

The Lee Monument is, of course, commemorative of the Civil War epoch, and is in honor of the great leader of the Confederacy, General Robert E. Lee. The column is hollow, and at its top is an observatory reached by a stairway.

The statue of Gen. Jackson, in the old Place d'Armes, now Jackson Square, is in honor of his heroic defense of the city against the British in the celebrated Battle of New Orleans in 1815. The statue was designed by Clark Mills, and has always been regarded as somethings of a marvel in its remarkable poise. In fact, it has been the cause of many weird fancies among the superstitious of the neighborhood, who did not understand that the horse and its rider could be made to withstand indefinitely both the laws of gravity and the elements by a proper distribution of solid and hollow metal in its construction. There are replicas of this statue at Nashville, Tenn., and at Washington, D. C.

The Margaret monument, on Margaret Place, at the junction of Camp and Prytania streets, is in commemoration of a noble character of New Orleans who devoted a lifetime to the orphans of the city. The name of this great benefactor was Margaret Haughery, herself an orphan, who developed the business of a small ordinary bakery into an immense and wonderfully successful steam bakery, the proceeds of which were devoted to the erection of ophan asylums and other kindred institutions, besides individual aid to hosts of needy children. Ntwithstanding she could not read or write, and although her personal life was one of self-denial and simplicity, she was universally respected and beloved throughout the entire city, from the richest to the poorest. The monument was erected by the ladies of New Orleans, and said to be the first ever erected to a woman in the United States.

This, briefly, gives one an idea—but just an idea at that, of New Orleans. There is much more to be seen there, so much in fact it would take several pages of type to briefly outline the various points of interest.

That the Executive Committee chose well when it decided to break a long-established precedent and leave the selection of a convention city to the membership, is not to be doubted, for undoubtedly it will mean a greater attendance.

To F. Salmen, president of the Salmen Brick and Lumber Company, of New Orleans, and his business associates, much is due for the choice of the membership. From the day the convention opened in Chicago last March until the final decision was reached Mr. Salmen kept up a constant and a persistent campaign to secure the Convention for his city. Wherever there was a gathering of clayworkers Mr. Salmen was there campaigning. When he learned that the membership would be permitted to make the choice by popular vote he got the printer busy and under date of October 15 sent out a circular letter which made such a strong appeal it undoubtedly swung many to New Orleans. This letter follows in part:

> Gentlemen—Joined by the Mayor of this city and the New Orleans Association of Commerce, we have extended an invitation to the National Brick Manufacturers' Association to hold its 1914 convention in New Orleans.
>
> We understand the question of meeting place will be submitted by the Executive Committee to the members of the Association for a vote by mail. We therefore take the liberty of addressing you this letter and asking your support of New Orleans' invitation.
>
> Our invitations have been extended after careful consideration, and we are thoroughly in earnest in wanting you to be with us next year. Strictly from a business point of view, we believe there are many good reasons why it would be a good thing to meet in the South—that section of the country in which such wonderful development is now taking place.
>
> A meeting could be held in this city the first part of March, which would be immediately after Mardi Gras, and would afford those so inclined an opportunity to come a few days ahead of time and enjoy Mardi Gras week.
>
> A trip here will also offer those who care to make same an opportunity to make the trip to Panama and return with the smallest possible loss of time and expense. There are semi-weekly sailings from this part by the United Fruit Company, with palatial passenger boats especially constructed for this trade.
>
> New Orleans is a great convention city, has ample first-class, fireproof facilities for caring for everyone, and is famed the world over for her cooking, and her hospitality and general ability to entertain. Historically, it is the most interesting city in the South, and can show more development of the most modern character than is to be found anywhere in the Southern country.
>
> We have recently spent seventeen million dollars on a sewerage and drainage system, and have constructed and now have in operation probably the most modern water purification and filtration plant in the world, which is owned and operated by the municipality.
>
> We have thirty miles of publicly owned and controlled wharf facilities, a publicly owned and operated belt railroad co-ordinating all railroads with the river front, and, all in all, have, without question, one of the most interesting cities in the country, both from a business, social and historic point of view.
>
> If you will meet with us next year, we will do everything possible to see that the convention is well handled, and that everyone is pleased with his stay.
>
> We will take everybody over to our plant, which we will reach by boat, twenty miles across Lake Pontchartrain—a beautiful ride—and there will show you one of the largest and most modern brick manufacturing plants in the country.
>
> For those who feel that New Orleans is far from the center of things, it may be well to add a few

> words. And it may be surprising for them to learn that the distance between Chicago and New Orleans is less than the distance between New York and Chicago. It is practically the same distance from Indianapolis to New Orleans as it is from Indianapolis to New York, and the following comparison of round-trip railroad rates between various points to New Orleans and New York, taking the regular winter tourist rate, which may be had to New Orleans up to April 30th, and the regular round-trip rate to New York, will show that from the location of probably a great majority of the members of the Association it will be as cheap or cheaper to come to New Orleans than to go to New York or to other Eastern points. We use New York merely for comparison.

	Round Trip			Round Trip	
From	To New Orleans	To New York	From	To New Orleans	To New York
Chicago	$37.40	$40.00	St. Paul	$50.80	$56.30
St. Louis	29.30	47.00	Des Moines	41.70	54.00
Kansas City	33.00	61.50	Evansville	28.25	40.00
Cleveland	41.55	26.00	Louisville	30.00	38.20
Cincinnati	33.45	34.00	Memphis	20.00	57.00
Indianapolis	34.80	37.00	Omaha	41.00	60.00
Detroit	43.95	32.00			

> Of course, if the meeting is held here the first part of March, the special Mardi Gras rates which are put on by all railroads can be taken advantage of, and will furnish a much cheaper round-trip rate than given in this schedule.
>
> Hoping we may have your co-operation in our effort to secure the next convention, and that we may have the pleasure of seeing you in New Orleans in March.

It can be seen by the above letter that Mr. Salmen and his associates have promised a lot, but Southern hospitality is equal to anything in the way of entertainment and those of us who know Fritz Salmen know that he is not lacking in that nature so characteristic of those born south of the Mason and Dixon line.

The official notice of the Convention city choice and the date follows:

> For the first time in the history of the association a convention ballot was recently taken, that the members might express their own individual preference for our next place of meeting. The result is most gratifying in that the ballot shows an unexpected unanimity of choice, New Orleans receiving three times the vote accorded any other one city. Indianapolis was second choice by twice as many votes as were cast for the third choice, Buffalo. The ballot is gratifying in another sense, for it demonstrates anew that our association is all that the name implies, a national association which is not restricted to any narrow geographical limitation, and that the members comprising the progressive, broad-minded clayworkers of the land, love to fraternize with their fellows from every section of the nation, preferring to visit the various representative cities of our country rather than be restricted to a limited, though central, territory. Heeding the lesson of the ballot, it is a safe prophecy that the association and its auxiliary and allied organizations will in the future have an even wider sphere of usefulness and influence than in the past.
>
> New Orleans is one of the most attractive cities in America. It has made remarkable growth during the past decade, and today combines both the modern and the antiquated in its architecture and general characteristics to an extent not found elsewhere. The old French Market and its quaint surroundings and the many other points of interest appeal to all sightseers, both young and old. Its semi-tropical climate makes it an ideal winter and health resort, and its great annual festival, the "Mardi Gras," has made it the mecca of thousands of fun lovers for a generation or more. The carnival is characterized by gorgeous parades and various social functions and entertainments, which are held preceding the first day of Lent. During this period King Carnival reigns supreme. The merry-making continues for the better part of two weeks and in response to the wishes of our members, our convention will be held March 2-7, the week following the Mardi Gras carnival, so that those who desire to witness same can go to New Orleans a week in advance of the convention. Quite a number have also expressed a wish to make a side trip to Panama to see for themselves the wonderful achievements of our army engineers in joining the Atlantic and Pacific oceans, while others may prefer a side trip to Havana, Cuba.
>
> Naturally a city of so many attractions has a number of fine hotels. The largest and most modern of these is the Grunewald, an immense fireproof structure, the terra cotta walls of which are conspicuous in the sky line of the city. Its cuisine is famed throughout the land. Its "Cave," for so its grill room has been christened, is unlike any other restaurant in the country. A rather blase traveler recently said that he considered it the most delightful place to dine he had found anywhere, at home or abroad. Because of its great capacity and many charms, the Grunewald has been chosen for headquarters during the convention. It affords ample convention halls, a splendid banquet room and all other needed accessories. Its lobby and mezzanine floor are both spacious and beautiful, making it a charming haven of rest after a day of sightseeing. It is operated on the European plan exclusively and grants the following rates to all members and those who accompany them: Rooms with bath, $3.00 and $4.00 per day. Rooms without bath, $1.50 and $2.00 per day. The above rates are for one person. When two or more occupy the same apartment an additional charge of $1.00 per day will be made for each extra person. These rates apply to convention dates only. Those who wish to attend the Mardi Gras carnival will have to make special arrangements for reservations during that period. The management calls particular attention to the importance of making early reservations, and requests members to communicate with the hotel direct, stating intended date, character of accommodations desired and the number in the party, etc.
>
> A very low round-trip rate to New Orleans from all sections of the country prevails throughout the winter. There is a special tourists' rate, good for thirty days or more and allowing stop-over privileges at all prominent points. Through sleeper service from Western, Northern and Eastern points are of the best. Hence our members will find the convention trip neither a tiresome nor an expensive one.
>
> All the auxiliary associations or allied organizations are urgently invited to arrange for meetings at the same time and place. Every possible facility will be afforded for the deliberative sessions and any social functions or pleasure trips that may be planned.
>
> The executive officers of other associations are requested to communicate with Secretary Randall relative to time of meetings, etc., so that conflicting arrangements may be avoided.
>
> Our members are invited to suggest topics for discussion and subjects for formal papers touching on various important phases of the business in which they are especially interested. Those desiring information as to the requisites of membership in the National Brick Manufacturers' Association, or other particulars as to the convention, are requested to address the secretary at Indianapolis.
>
> THE EXECUTIVE COMMITTEE.
> W. H. H. ROGERS, President.
> THEO. A. RANDALL, Secretary.

Secretary Randall has not announced the program, but will make it public at an early date. He has promised an unusually strong program this year and this fact, coupled with the good things promised by Mr. Salmen, assures every clayworker who makes the trip South an excursion worth while.

CANADIANS MEET IN TORONTO JAN. 27-30.

National Body Plans Big Session and Secretary Walsh is Arranging Excellent Program.

The annual convention of the Canadian National Clay Products Association is to be held at the King Edward Hotel, Toronto, Jan. 27-30. This was decided at a meeting of the executive committee held Nov. 14.

Face Brick Men Plan Big Meeting

PROBABLY the largest gathering of face brick manufacturers and dealers ever in session will meet at French Lick Spring, Ind., Dec. 10-12 when the American Face Brick Manufacturers' Association and the Face Brick Dealers' Association of America meet in joint session. Neither of these organizations are out of their swaddling clothes, but have proven themselves husky youngsters and it is more than probable that they will launch a campaign for the coming year that will mean much for the industry.

The choice of the Indiana resort for the joint conference is a most excellent one. Being located in the center of the face brick field and easily accessible from all directions no hardships either as to effort expended or money will fall on anyone who desires to make the trip.

French Lick Springs is called the Carlsbad of America because of its mineral waters and the famous mud baths. It brings resorters and tourists from all over the world at all seasons and there is no similar place this side of the Atlantic.

The conventions are to be held in the French Lick Springs Hotel which is the largest, if not the largest structure, devoted exclusively to hotel purposes. It is a fireproof structure being built of St. Louis Roman pressed brick and trimmed in stone. Its constructor showed his further faith in burned clay by topping this mass of handsome brick with clay tile and using Mosaic tile on the floors wherever possible. The hotel is six stories in height and can accommodate nearly one thousand guests.

The program has not been announced by Secretary Hollowell of the manufacturers' association or by Secretary Queisser of the dealers' association, but both assure their members it will be meaty and that there will not be dead moments during the entire session.

The conventions will be held separately, one day of the three alone being devoted to a joint session, but it is more than likely that evening conferences will occur.

The two associations, while representing two different branches of the face brick industry have a common interest and were organized with the idea of working in perfect harmony. The avowed objects of both organizations, as announced in their printed literature, are about the same and are contained in these three items:

To promote publicity in the transaction of business.

To promote cordial and friendly relations among members.

To collect and disseminate accurate information concerning the manufacture and sale of face brick.

The executive committee of the Manufacturers' Association will meet at French Lick Springs Hotel Dec. 9 to go over many matters proposed for presentation to the membership and the board of directors. This committee is composed of L. G. Kilbourne, E. C. Clark, J. M. Adams, J. W. Moulding and J. W. Sibley.

Practically all the members of the Manufacturers' Association have advised Secretary Hollowell that they expect to be represented by one or more of their firm.

The tentative program of the Manufacturers, as announced by Secretary Hollowell, follows:

WEDNESDAY AFTERNOON, DECEMBER 10, 1913.
2:00 P. M.—Meeting of the Board of Directors.
2:30 P. M.—First Session of Membership.
Calling the Roll of Membership.
Reading of Minutes.
Admission of Members.
Annual Address, by President L. G. Kilbourne.
Reports of Secretary-Treasurer.
Submission and action upon proposed new Constitution and By-Laws.

THURSDAY MORNING, DECEMBER 11.
9:00 A. M.—Second Session of Membership.
Unfinished Business.
The Advantages of Adopting Uniform Methods to Improve the Service of the Members of this Association, by J. W. Moulding.
Freight Traffic Work by the American Face Brick Association, by R. D. T. Hollowell.
Ethics of Selling Face Brick, by F. W. Butterworth.
New Business.

THURSDAY AFTERNOON, DECEMBER 11.
2:00 P. M.—Joint Sessions of Manufacturers and Dealers.
Meeting called to order by Presiuent, American Face Brick Association.
What the Manufacturers and Dealers Owe Each Other, by W. S. Smit.
A Paper by Iverson C. Wells, Editor "Brick and Clay Record."
A Paper by Arthur D. Rogers, Editor "Brick Builder."
A Paper read by a member of the Face Brick Dealers' Association.
A Paper by T. A. Randall, Editor "The Clayworker."
Price Cutting vs. Salesmanship, by H. W. Holmes.

THURSDAY EVENING, DECEMBER 11.
7:00 P. M.—Informal Banquet.

FRIDAY MORNING, DECEMBER 12.
9:00 A. M.—Third Session Membership.
Election of Officers.
Unfinished Business.

FRIDAY AFTERNOON, DECEMBER 12.
2:00 P. M.—Unfinished Business.

The Springs Hotel management is making every preparation necessary to take care of both associations. Several little entertainments have been arranged which promise to be interesting.

Secretary Hollowell suggests the following railroad routes for members: For those who are located at or adjacent to Cincinnati or East of that city, the B. & O. S. W. The Monon route operates nightly through sleeper from Chicago to French Lick. There are several fast trains out of St. Louis which make direct connection at Mitchell, Ind., for French Lick. There is through day-service from Indianapolis to French Lick.

The rates at French Lick Hotel, which is conducted on the American plan, are: Rooms with running water, per person, $4; with running water and toilet, $4.50 and $5; with baths, $5 and $6.

POTTERY ASSOCIATION MEETS DEC. 2.

Labor Committee Makes Report at Session on Conference Held With Workers.

All arrangements have been made for the annual meeting of the United States Potters' Association, which will convene in the Assembly room of the Ft. Pitt Hotel, Pittsburgh, Pa., Dec. 2. The session probably will not last more than two days, and, as is customary, there will be a gathering around the festal board on the last night of the convention.

One of the interesting matters that will come before the convention is the presentation of the report of the labor committee, which met with a committee of the workers in the Hotel Astor, New York in October.

It is quite probable that the same officers and committee will be elected, with the exception of president.

Chaldeans to Run Special Train to New Orleans

Plan Big Boosting Trip to National Convention of Brick makers and Second Pow-Wow of Clayworkers' New Lodge

A SPECIAL TRAIN will take the members of the Supreme Temple and of Chicago Local Temple No. 1 to New Orleans to attend the twenty-eighth annual convention of the National Brick Manufacturers' Association and the Second annual session of the Ancient Order of Chaldeans, which will be held in the Mardi Gras city the week of March 2-7.

The train will leave Chicago on a date yet to be determined and its route will be so arranged that the special will take on Chaldeans and those clayworkers who wish to partake of their hospitality at certain points along the way, thus giving members and their friends in the East, the Central West and West, an opportunity to take advantages of the many special privileges that will be enjoyed by those on the Chaldean Special.

Members of both the Supreme Temple and Chicago Local met recently and determined upon engaging the special train. W. P. Varney, Most Venerable Nebo of Chicago Temple, C. B. VerNooy and C. L. Rorick were selected as members of the transportation committee and these three will make all the necessary arrangements. The entertainment of the Chaldeans, while en route to New Orleans, was turned over to the Chicago Clay Club at its solicitation and this body of jolly entertainers, with L. B. Binyon, chairman of the amusement committee, will shoulder all the responsibility of seeing that every Chaldean and his friends will be given a good time both while on the train and in New Orleans.

It will be recalled that Chairman Binyon headed the same amusement committee at the first or initiatory session of the Chaldeans last March in Chicago and that he and his associates were responsible for the sensationally good time and the many surprising features at the banquet and cabaret show that followed the lodge work.

Chairman Binyon already has made preliminary plans for the entertainment of the guests on the Chaldean Special and, although he does not give the slightest hint what those plans are, he says he guarantees some surprises and is willing to stake his next year's income that not one single passenger on the "Special" will regret being on it.

One fact to be impressed upon those who wish to make the trip with the Chaldeans is that there is to be not one cent charge for any of the entertainment or pleasure that will be provided on the train. The special excursion round trip rate of $37.40, with the regular Pullman rate of $4.40 for upper and $5.50 for lower berth, which will be in force from Chicago to New Orleans at that time, will be charged on the Chaldean Special. The same is true at any other point in the United States. For instance, if any Chaldean or any of his clayworking friends who may reside in Buffalo, Cleveland or Minneapolis and who may wish to go on the Chaldean Special they can be routed through Chicago or at the first most convenient point on the Chaldean route and the fare will be the same as if they went direct from their home to New Orleans.

Two routes are being considered for the Chaldean Special—one over the Big Four and the other over the Illinois Central. Both have certain advantages and Chairman Varney is disposed to leave it to a decision of the Chaldeans who wish to make the trip, as this will best serve the convenience and the interests of the majority.

The Big Four Route, probably, will be most convenient for those who wish to go from Eastern points. For instance, those in Pittsburg and the east could meet the train at Cincinnati, as well as those from Cleveland, Dayton, Columbus and the other more central points.

The Illinois Central route, probably, would serve those West of Chicago.

The Big Four is the longest route but as it is proposed to stop the Special at Mammoth Cave long enough to view that wonderful freak of nature, this will somewhat pay for the extra time.

The Illinois Central offers the shortest and most direct route and this fact may appeal to some.

Chairman Varney, it can be seen, is in somewhat of a dilemma, and his decision to leave it to a popular vote, is wise. It is, therefore, desired that every Chaldean and friendly clayworker who wishes to attend the two big events of the year—The N. B. M. A. convention and the Chaldean Pow Wow, to write at once to Brother Varney and express a wish as to which route is most convenient. It is necessary that this be done at once so that the route may be selected, the train engaged and ample time given Supreme Keeper of the Tablets Wells to make announcement to every member far in advance of the time of the trip. Address W. P. Varney, 303 Chamber of Commerce, Chicago.

The train will be a De Luxe Special and will consist of standard 12-section and drawing room sleeping cars, observation car, club car, through dining car, baggage car, etc. There will be plenty of attendants and the comfort and pleasure of the passengers will be assured.

The hospitality of the Chaldean Special is not exclusively for Chaldeans. Any clayworker, and especially members of the National Brick Manufacturers' Association and kindred organizations, are invited to join the Chaldeans and help make the trip one great boost for the clay product industry and, at the same time, feel that they will be enjoying the time of their lives.

The train will bear huge streamers proclaiming the fact that clayworkers are aboard and are en route to New Orleans under the guiding hand of the Chaldeans. Nothing will be left undone either on the train or while in New Orleans to boost burned clay. Rally, Chaldeans, and make it a point to be at New Orleans—the boys need you.

Clay Crafter in Bound Volumes.

Volume No. 2 of "The Claycrafter," the valuable little monthly journal issued by the C. W. Raymond Co., of Dayton, Ohio, has reached this office. It is bound handsomely and reflects the worth of its contents. "The Claycrafter," while designed as a "house organ," has become a dignified publication devoted to the clay product industry and contains many useful and instructive articles.

Unknown Sends Challenge to Box Fate or Hoskins

By Milton Jud Williams

Sporting Editor "Brick and Clay Record"

ALMOST simultaneous with the announcement that the Ancient Order of Chaldeans is to go to New Orleans for the First Annual Pow Wow in a Special De Luxe Train comes a challenge from a well-known Chaldean who says he wishes to box either Fighting Harley Fate, the Plymouth Rooster, or Kid Hoskins, the Terre Haute Terror at the next smoker given by the Chaldeans.

It will be recalled that these two gladiators boxed four hot rounds at the smoker given by the then newly organized lodge of clayworkers in Chicago last March. I had to call the bout a draw because of police interference and the championship title has remained in doubt the past year.

The athletic committee of the Chaldeans, realizing the great interest that was manifested in the match last year, has purchased a handsome silver loving cup valued at $100 which will be given as an annual trophy. This trophy will bear on one side an engraved image of the sacred bull of the Order with this inscription underneath:

Annual Trophy

Athletic Committee
ANCIENT ORDER OF CHALDEANS

The Holder of this Cup
Has Proven His Supremacy as an Exponent
of the Manly Art
For the Year Last Inscribed
On Its Surface.
He Who Fights for It and Wins the Trophy
Twice in Succession
Becomes Its Undisputed
Owner.

On the reverse of the cup the names of the winners each year will be engraved, together with two images of boxers in fighting position, emblematic of the trophy.

In view of this handsome trophy and the challenge which I have received from the "Unknown," I feel that the next smoker, when it is pulled off at New Orleans in March, will be enlivened by some very interesting little set-tos.

This "Unknown" is a well-known Chaldean in good standing and seems to be in earnest. Read the challenge he sent me a few days ago:

> Referee Jud Williams;
> Sporting Editor
> "Brick and Clay Record":
>
> I want to challenge either Fighting Harley Fate or Kid Hoskins for the Chaldean championship. The bout last March came to such an unsatisfactory ending, owing to the interference of the police, I feel that they should either fight it over or draw straws to see which shall accept my challenge. I am in earnest about this, but for business reasons ask that my name be withheld for the time being at least.

As a way out of the difficulty I suggest that both Fate and Hoskins fight three rounds at New Orleans to decide their supremacy and thus enable me to award the victor the trophy cup which will be engraved with the name of the winner as its holder for the year 1913. There will be no chance for interference this time as New Orleans permits boxing contests.

Whoever wins the three-round bout will then take on the "Unknown," who has issued the challenge, this match to be later in the evening and to be for six rounds. The winner will receive the cup with his name engraved thereon as the 1914 champion.

I understand that both Fate and Hoskins criticise my draw decision last March. Fate declares he was easily the winner and Hoskins declares that if he had been permitted to continue he would have worn down his heavier opponent and beaten him to a frazzle.

I do not propose to enter into any personal argument with either one of these gentlemen as a referee's decisions are made in the ring and the ring only.

I will say this, however, that the conditions of the bout were that it should be to a finish, or if stopped by police interference that no decision was to be made if both men were on their feet. That was, at least, my understanding, and having so interpreted the rules, I rendered the decision of a draw—my only alternative.

In view of all these conditions I am of the opinion that both Fate and Hoskins should fight the three rounds at New Orleans to settle the championship title of 1913. This being done let the victor take on the "Mysterious Unknown."

I put the matter up to these two gladiators squarely. What, gentlemen, do you propose to do? You may address me in care of "Brick and Clay Record." If I do not hear definitely from you within thirty days I shall declare last March's bout "No contest" and will announce the 1914 bout open to the world, with the "Unknown," whose challenge I now have, as one of the challengers. If I should happen to receive several challenges I will conduct an elimination contest of three rounds and the victors will enter the championship bout. Whoever wins the second bout will be declared the Chaldean champion for 1914.

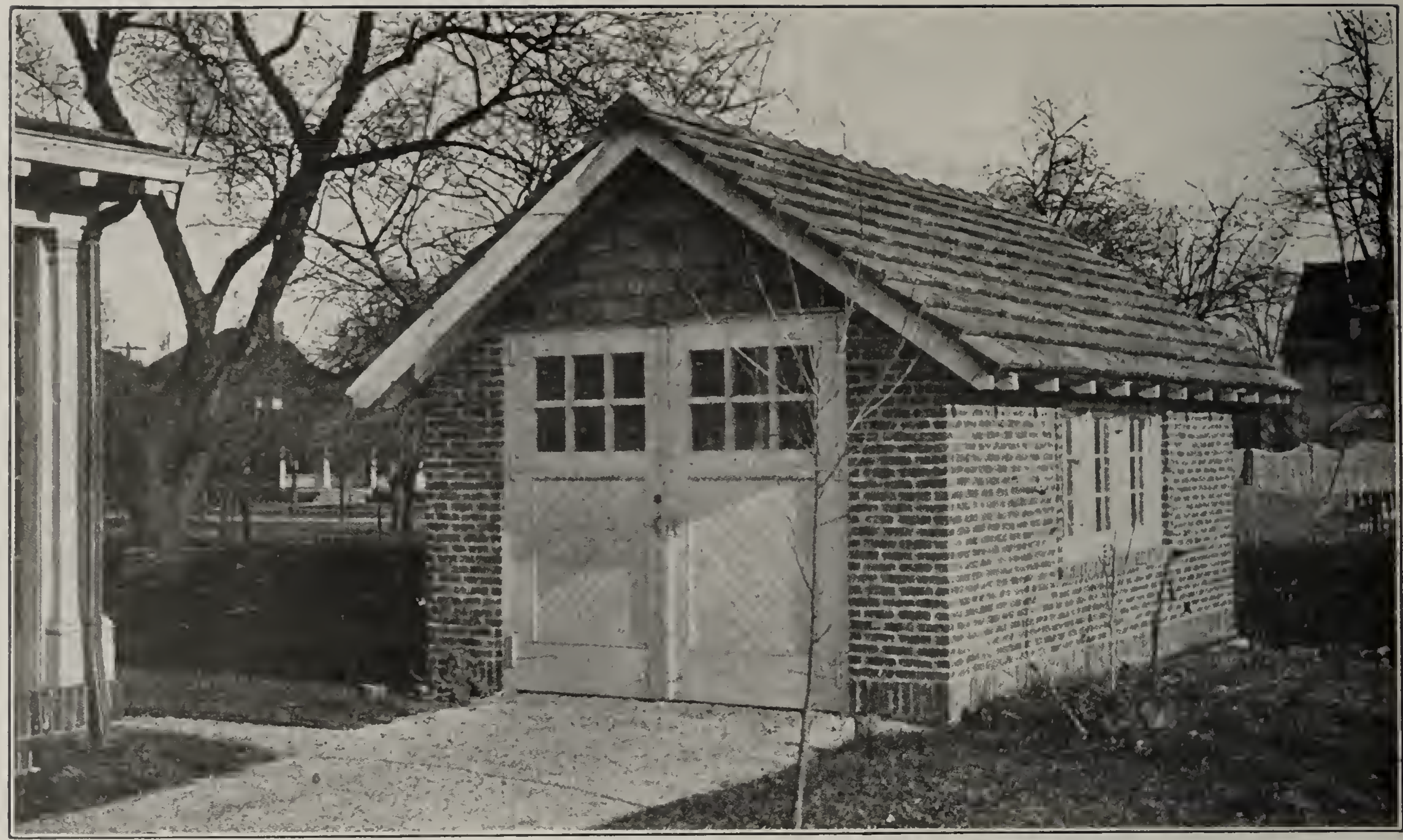
Personally, I would like Fate and Hoskins to settle their little matter as it should be settled. They proved themselves championship material and if they do not reenter the ring and fight it out to a decision they will be denying the sport-loving element of the Chaldeans one of the most interesting bouts of the season.

Fate, with his nimble footwork and aggressiveness, is a worthy contender in any ring. He has a straight right that is well-timed and seldom fails to reach its target, as Hoskins' face showed more than once.

Hoskins, lighter somewhat, but full of pepper and, despite the fact that the battle seemed to be against him many times, never failed to come up smiling. Hoskins, too, showed a most excellent ring generalship. You who saw the bout recall the time that Fate stood Hoskins on his head with a straight right? Hoskins did not take the count but was immediately on his feet, darted through Fate's legs and hid under his torso, much to the dismay of Fate who lost him entirely for the time being.

Hoskins claims that it was these tactics that would have won the battle for him eventually as he had Fate shadow boxing and no man can stand that sort of work and last long.

However, what may or might have been is not for me as referee under the circumstances to say. It was a cracking good battle as long as it lasted and I hope we will get to see the finish at New Orleans. I await their answer.



Type "A" Garage. It can be Built Fireproof for from $265 to $305.

Brick and Hollow Tile Garages

Garages to House One and Two Cars May Be Built of Burned Clay for Less Than Frame —Here Is Good News for the Clayworker and Valuable Suggestions for the Builder

By D. W. Fredericks

A FIREPROOF GARAGE is sensible, inexpensive and, finally, good to look upon. A garage that is not fireproof is silly, is quite as expensive as one of fireproof construction, and, unless constantly repainted, not of fair face, after a few seasons have passed over its roof.

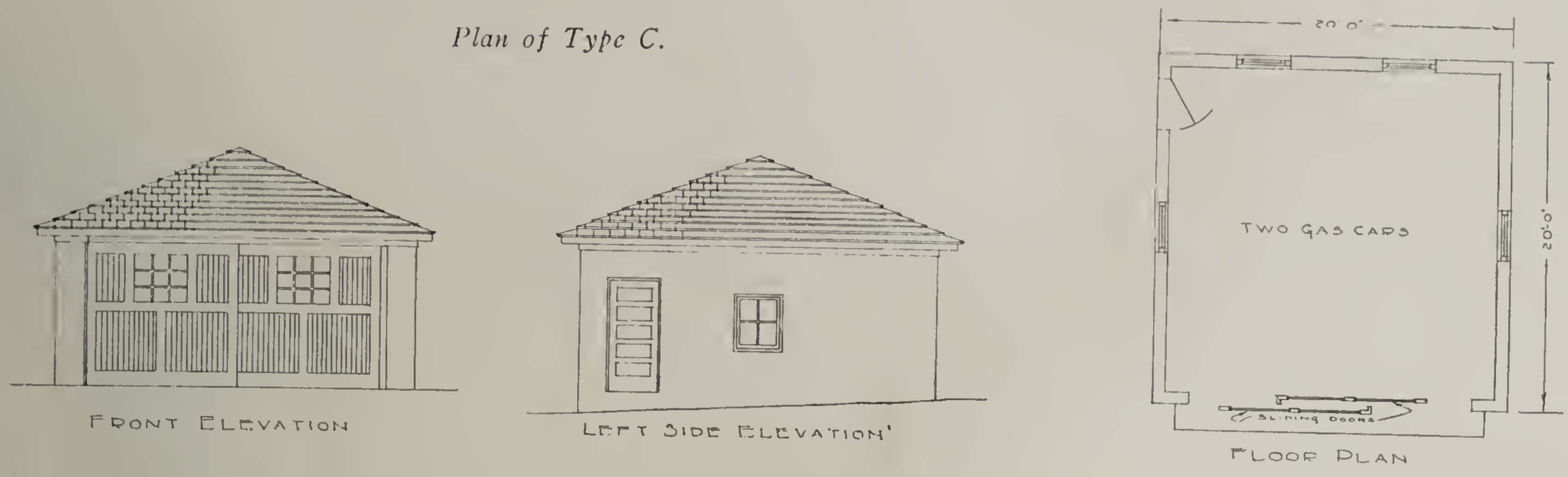
You will not take exception to the statement that it is sensible to build the shell that is to enclose a costly piece of machinery, surrounded by a sea of oil and an atmosphere of gas vapor, in some fireproof material, not only to shield the car and accessories from outside fire hazards, but to confine incipient flames, started through some inside agency, to their original source. You may, however, question the point of fireproof construction being, in its initial cost, as cheap as frame.

The trouble is, your idea of "building" is based on residential work. The average brick house will cost more to build than a frame house of the same lines and same dimension. One reason for this is that it is practically impossible to secure plans and specifications on a brick house that will not call for more expensive plumbing, hardware, and what not, than a frame house of the same outlines and cubic contents. Just why this is, is hard to say—but the moment you say "brick" to more than half the architects that have to do with residential work, their artistic minds stray to "Art Noveau" and other expensive things. The architect has not learned as yet that the man who builds in brick today is doing it *because he saves money by doing so*—not because his "Pa's rich and Ma don't care."

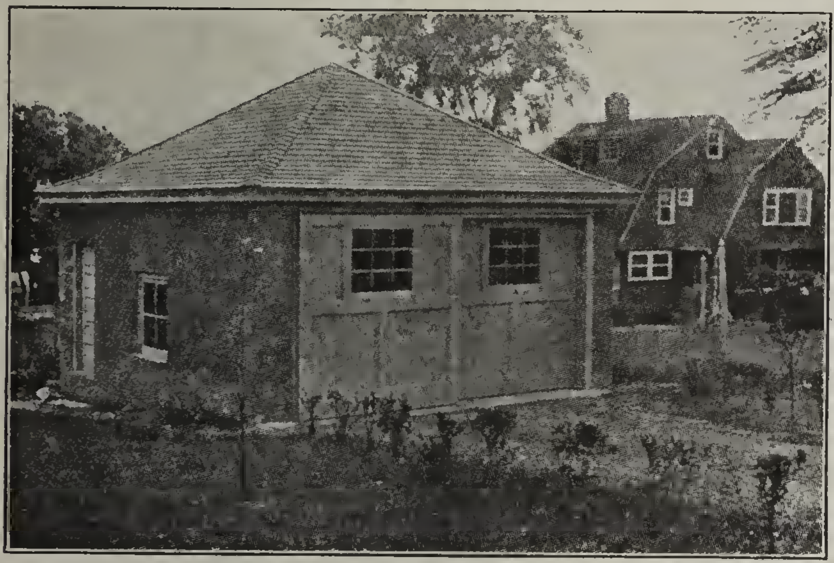
Now the plumbing in a garage is primitive, hardware infrequent and sensibly plain, while the other manifold things that go to add to the cost of residence building are conspicuously absent. Add to this the undoubted fact that lumber in every form has risen steadily in price for twenty years, *while brick has stood still or cheapened* and hollow tile given us a structural material that is even cheaper than brick. Then the wonder of the cheap fireproof garage *vs.* the expensive frame garage begins to diminish.

Having made a careful study of costs, the writer gives five types of small garages, *every one of which has been built* and upon which the figures given are authentic; these figures had to be adjusted, as the buildings were put up in different parts of the country and under varying labor conditions. As given here, they cover the labor approximated on the wage scale of inland cities like Columbus, Ohio, Peoria, Ill., or Des Moines, Iowa. They contemplate a "fair

Plan of Type C.



garage will take two gas cars, and has ample space for a work room and repair bench. It will cost $1,565, with eight-inch brick walls, the exterior being of face brick to match the house. This cost also includes the tile roofing. If hollow tile be used, with stucco veneer, a deduction of $65.00 may be made, and a further deduction of $50.00 if other roofing be substituted for tile.



Type "C" Garage. With Space for Two Gas Cars. It can be Built with Fireproof Materials for from $560 *to* $640.

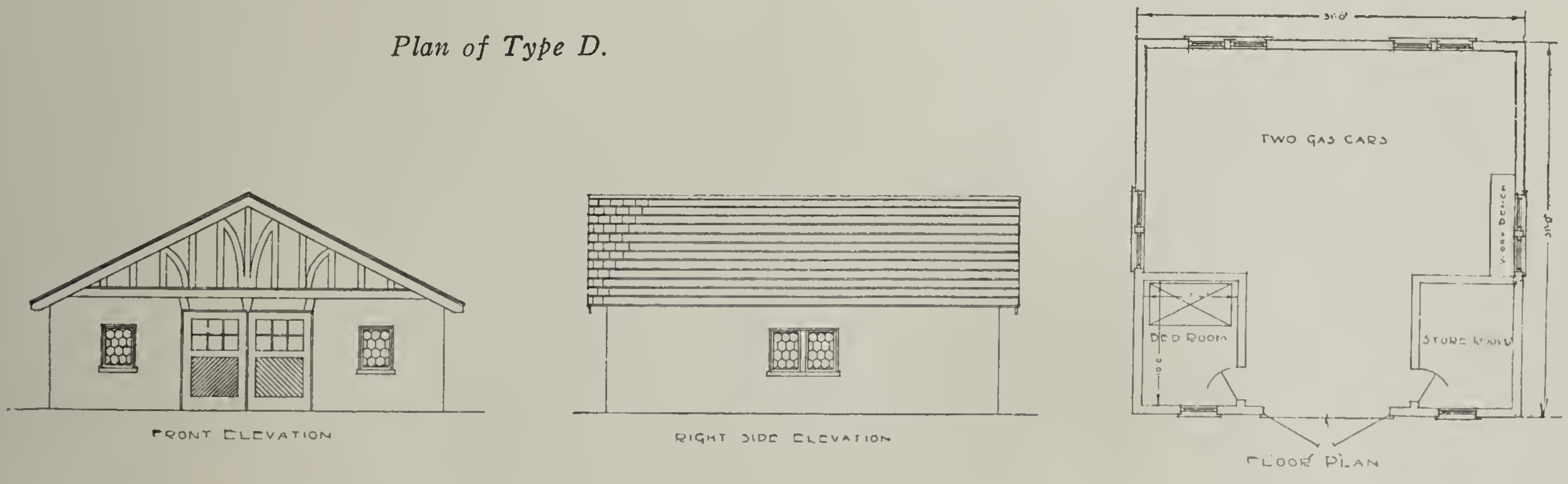
By way of "something different" in the garage line, the plan of "Type E" will prove interesting. Here is room for two gas cars, and the upper story is so made that it can be used for a conservatory. In that event, a skylight is put into the roof, or glass tiles are used at certain stated intervals on the regular tile roofing. This garage may be built for $1,900, in hollow tile, veneered with stucco. If in brick, with eight and twelve-inch walls, the exterior being face brick to match the house, the cost would be about $100.00 more. The same amount would be saved by using some roofing material that was cheaper than tile. The second story floor beams would be of timber, but could be and should be protected from fire by Sackett board or some similar fire retardent. To those to whom the conservatory idea makes no appeal, it may be that some other utilization will suggest itself. With a floor that gives a clear span of nearly 20 by 30 feet, much can be done—a billiard room, an auditorium, or, at any rate, a rehearsing place for private theatricals, a "gym" or—tell it not in Rome—a place for tango lessons.

Compare these figures with the cost of wooden garages. With one exception, the cost of frame will equal the costs given for hollow tile—yes, for brick, and fine face brick, at that. The exception is in the two story garage, and in this the frame cost is problematical. It is of so odd a design that it would be unsafe to figure on anything that is to be built—and our figures are taken from a "has been built," we therefore know that they are right.

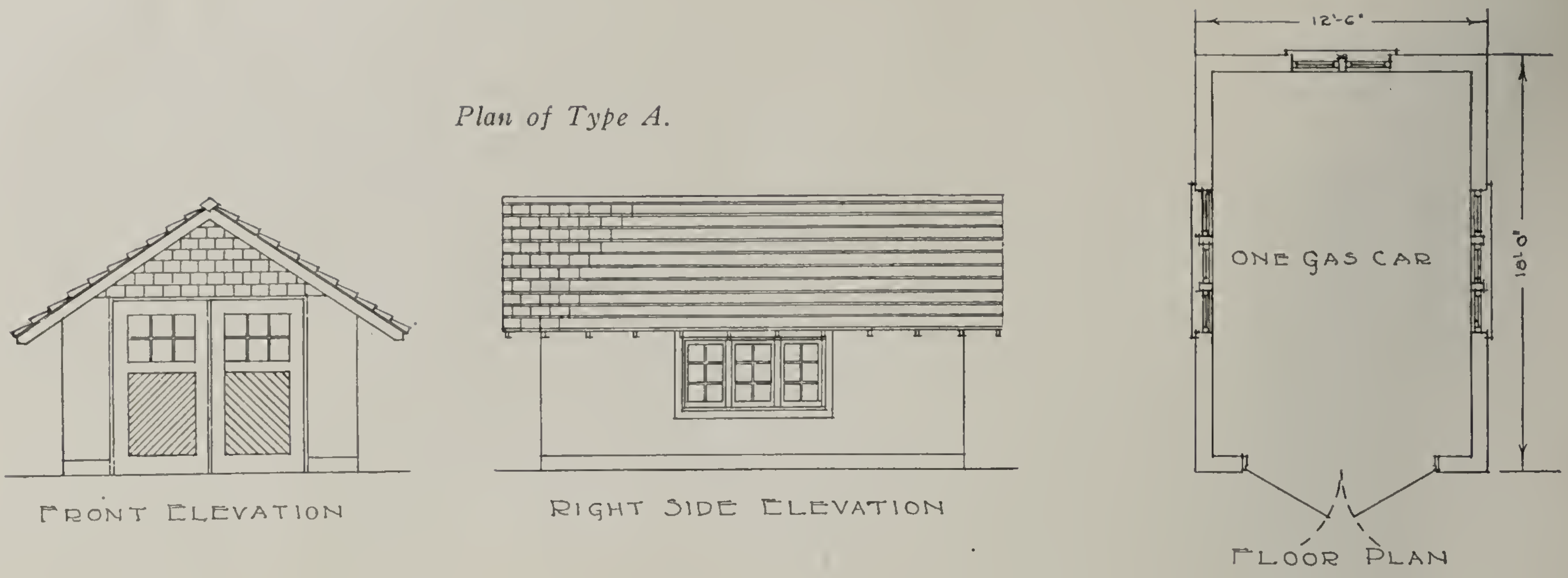
Type "D" Garage. A more Ornate Design, and Including Sleeping Room and Store Room. Built in Burned Clay, it will Cost about $1,500.

One additional point, and then we will leave you to study the question quietly—these garages are not only fireproof, but, to a large extent, cold-proof. The walls are insulated, whether of brick, with an air space between the face brick

Plan of Type D.



Plan of Type A.



average haul" from the railroad siding, and are based on the assumption that the garage is being built in connection with other work—that is, that it will not require constant and individual superintendence and that the workmen who are engaged in building it will be employed on other similar work nearby.

Type "B" Garage. This can be Built either in Brick or Hollow Tile for from $530 *to* $600.

These are normal conditions, and the only ones upon which a fair comparison of prices can be given. Were any of these garages to be built as a separate and distinct contract, the costs would be higher than those given—as much higher as the contractor believed the owner would stand, on the plea that "you have to bring the men all the way out here, for, perhaps, a few hours' work" and things like that.

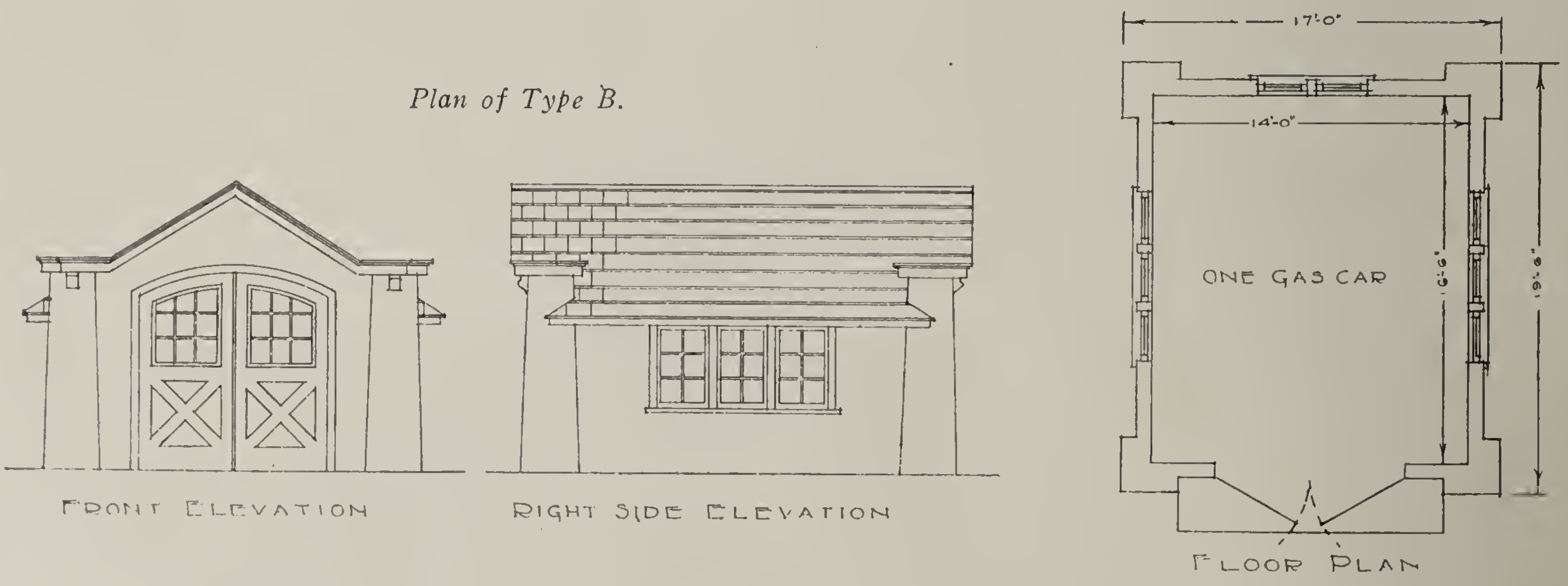
The larger illustration is that of a garage designed to hold one gas car. Its dimensions, as shown on the plan marked "Type A" are 18' 0" by 12' 6". With eight-inch brick walls, the outside face being of face-brick to match the house, and a tile roof, this garage will cost $305. In hollow tile, with stucco veneer the cost would be about $15.00 less. Omit the tile roof and substitute asbestos or other non-inflammable material, and the cost will be reduced by about $25.00, according to the kind of roof you demand. This, therefore, makes the cost of this garage, in fireproof materials, run between $265.00 and $305.00.

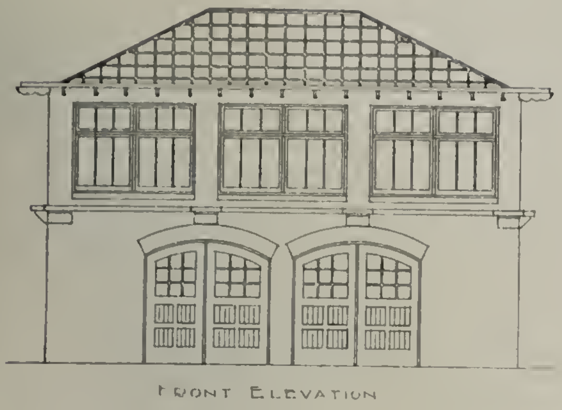
The design of any building has an immediate effect upon its cost, and the cost of "Type B," with the tapering columns at the sides. is made greater by this architectural feature. On the other hand, it contains more floor space than "Type A" being 14' 0" by 19' 6" and can be arranged so as to provide ample space for repairs and, on a pinch, could give space for a cot-bed for the *chauffuer*. This garage, with hollow tile walls, stucco veneer and tile roof, will cost $550.00 or, with eight-inch brick walls, face brick to match house, about $600.00.

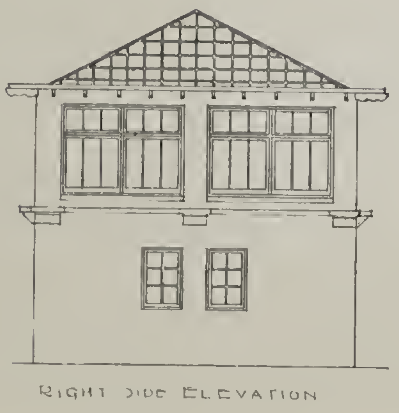
Considering the amount of space given, the plan of "Type C," with accommodations for two cars, seems to be the most for the money. As the plan shows, it is 20' 0" by 20' 0" outside dimensions, which would give ample room to care for two big cars. In hollow tile, stucco veneer and with tile roof, this garage will cost $600.00. If of brick, face to match adjoining house, add about $40.00—if tile roof be omitted, and asbestos substituted, deduct about $40.00.

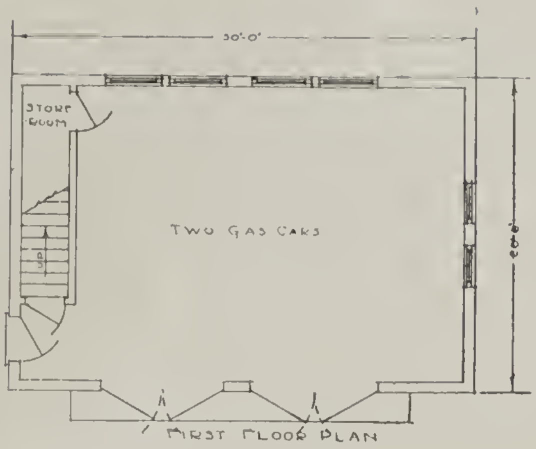
Real sleeping accommodations are often necessary, particularly where there is not "room and to spare" in the house, and a good arrangement is shown in "Type D" where a store room is provided, as well as a sleeping room. This

Plan of Type B.









Type "E" Garage. A two story Garage with a Conservatory. It can be Built for $1,900 *in either Brick or Hollow Tile.*

and the common brick backing, or of hollow tile, which is self-insulating. It is easy to arrange a heating system that will bring heat from the house, and, with fireproof construction, you will find that this heating is a smaller problem than it would be were the garage of frame. And—the walls are rough finished inside—the tile or the common brick showing up, unassuming and unashamed. In the frame garage you would be compelled to lath and plaster if you wanted to be sure the radiators would not freeze. Perhaps in that "lath and plaster" cost some of the disadvantage of frame figures looms big upon the horizon. We cannot, however, explain just where frame falls down when it comes to comparative costs—but we just ask—do you think you can build any one of these garages in frame for any less money than we have named for brick and tile? If you do, just get an estimate—that is, an estimate from some one who will feel that he has to take the contract at the figure he **gives** you, in case you feel that you can afford the luxury of building in frame.

Correcting Balling of Clays.

Some clays, because of their nature, cling around the blades of the pug mill, forming balls or cores. This condition produces cracks or laminations. It is quite often the clay is of such a nature it requires special construction of the pug mill blades. Sometimes if the mill is polygonal, instead of circular on the interior, the trouble may be reduced or even stopped, although with certain clays this sort of barrel may produce the very condition you are seeking to avoid. It will be found that where the source of the troubles—the blades—is where the remedy lies. Balling clays travel at different speeds through the outlet in different parts of the area. That produces the cores and laminations in the column. Change the pitch of the blades, their speed of rotation and the shape and size of the barrel and so regulate all as to give your clay the same speed throughout the mill and you will have solved your problem. It is a matter of individual experiment to find out what the pitch shall be, but it is worth the while.

Makes Screw Driver Stick.

Bees wax or soap placed in a screw slot will make it stick to the screw-driver blade for starting.

Keep Your Pulleys Wide Apart.

To get good results from a belt and pulley drive the two pulleys to which the belt is connected must be as far from each other as is necessary to keep undesirable friction and slipping within certain limits. In most clay plants the pulleys are as close together as they can be crowded. A slack belt covers more pulley surface and therefore has more pulling purchase.

Uses Liquid Air in Quarry Blasting.

Liquid air, in combination with a combustible material, is being used for blasting limestone in a quarry at Rudersdorf, Germany, and the success of the method indicates the availability of a new explosive that is of great power and safe to handle. The new cartridge is made of pasteboard packed with petroleum and clay, around a narrow tube of gauze which is filled with liquid air. When the liquid air has thoroughly penetrated the clay and oil, the cartridge can be exploded with an electric detonating cap. Increased safety results from the fact that the liquid air soon evaporates if the charge misses fire and there is no danger of a delayed explosion. The scientific basis of the process is that liquefied air under pressure can be exploded by a violent shock, such as that of a detonating cap, and the presence of a combustible material, such as oil, results in a secondary explosion caused by the combination of the free oxygen in the liquid air with the combustible material.

Blasting Clay for Land Slides.

One brickmaker causes a landslide to get at his clay. He starts in a straight face of clay and drills 1½-inch holes, charging them with blasting material. These are fired simultaneously in order to produce the landslide. The holes must be placed in at the bottom of the face, and far enough in and in such a direction that the foot of the cliff is undisturbed. A small crack is the only immediate result shown. Water in small quantities is permitted to run into this crack. The foot of the cliff pushes out slowly and the top gradually sinks without falling over. The clay is said to be nicely pulverized by this process.

Making Your Dryer Efficient

Engineer Describes Simple and Inexpensive System Which Any Brick Manufacturer Can Make if Directions Are Followed Carefully

By **H. C. Russell**

Member American Society of Heating and Ventilating Engineers

Are you getting all that you should out of your dryer? Mr. Russell here gives you some very valuable suggestions if you are not. He takes up the progressive dryer, the use of waste heat from cooling kilns, of the capacity of the dryer, time, and, in fact, every problem that should be considered in connection with a discussion of this subject.

The system here described is not patented and may be built by any brickmaker, as the entire construction requires only what material that can be made in any yard.

This paper was read before a meeting of the Society of Heating and Ventilating Engineers and created considerable interest among the delegates.

AMONG dryers for various materials it is probable that brick dryers have more commercial importance than any other class of dryers except, perhaps, lumber dryers. It is not the purpose of this paper to discuss the relative merits or demerits of the various brick dryers made by different manufacturers, for along general lines when they are properly designed, and properly made there is little difference among them, that is, among the type of dryers we propose to discuss.

The dryers to be discussed are the so-called progressive dryers in which the brick fresh from the machine are placed, dried on the progressive principle, and after drying are removed to the kiln to be burned. The use of the waste heat from kilns cooling will also be considered. The capacity of the machine, time for drying, number and capacity of kilns, time for burning, cooling, emptying, repairing, setting, etc., must all be taken into account in the proper design of the yard.

The old-fashioned method of "hacking" the "green" brick in narrow covered sheds in the yard grew into disrepute for several reasons. Inability to control the air conditions often produced cracking in hot dry weather and in damp weather the drying was so slow as often to tax the yard for hacking space. The construction of the hacks were generally such as would not provide proper protection against wind and rain. In a properly designed yard the brick, especially through the Summer when most of the brickmaking is done, can be dried almost totally by heat which would otherwise be absolutely wasted. It is also said on good authority that with certain types of kilns the burning is more uniform if the kilns are cooled by air drawn through them by the fan instead of the heat escaping in the natural way.

The first step is to investigate so far as possible the time required and the best temperature for drying the brick made from the particular clay to be used. This may be often determined by examining other plants in the neighborhood using similar clay, or, lacking this facility, a few barrels of clay may be shipped to the nearest well-equipped yard, some brick made and tried in the dryer or under special drying conditions at some testing laboratory if necessary. When these two questions have been correctly settled, if one figures correctly, there is not much danger of the dryer itself being a failure.

The time required for burning depends almost entirely on the kind of clay, as does the time to be allowed for cooling, but not to so great an extent. These factors should be investigated in the beginning, as they have a bearing on the design of the yard and indirectly affect the dryer. The best method of presenting this subject is to take an example, assuming such conditions as we might find in an ordinary yard.

The data we will assume as having been found from an investigation of a proposed plant are as follows:

Daily output=100,000. Time required to dry=24 hrs.

Temperature maintained in hot end of dryer=200 deg.

Temperature maintained in wet end of dryer=90 deg.

Assume kilns of 200,000 bricks capacity each on a schedule about as follows:

Time for setting per kiln=2 days.
Time for burning one kiln=9 days.
Time for cooling per kiln=6 days.
Time for emptying 1 kiln=4 days.
Time for repairing 1 kiln=5 days.

According to this, the total time required for a cycle or rotation is 26 days. We shall, therefore, have to provide a sufficient number of kilns to take the output of the plant for this time. It is seen this would be exactly 13 kilns of 200,000 bricks' capacity each. To provide for possible mishaps we should have at least 14 kilns.

If one constructs a schedule from the table, he will note that, allowing for all work except burning to be stopped on Sundays, there will never be more than four kilns cooling at one time, and unless stops occur at other times there will never be less than one. If the setting is carried on simultaneously in two kilns, allowing the setting in each kiln to start when the setting in the preceding kiln is just done, thus making the total time for setting each kiln four days, it will be found that the number of kilns cooling at one time will be three at nearly all times with an occasional rise to four as a maximum. It is not, however, the purpose of this paper to go into detail on this phase of the subject.

The air ducts leading from the kilns to the fan and thence from the fan to the dryer are invariably constructed of brick and are underground. Good practice has fixed the size of the duct connection to each kiln at 4 to 6 sq. in. per 1,000 brick kiln capacity, the higher figure being used for the long runs. Equalize the main duct to carry the maximum number of kilns cooling at one time and carry the duct this size to the fan inlet chamber. Remember that the kilns cooling may be any combination of the various kilns. In our example with 14 kilns of 200,000 each, the duct connection to each kiln (using 5 sq. in. per 1,000) is 1,000 sq. in. $= 32 \times 32$ in. When the next kiln is connected the main is 42×42 in.; when the third is connected it is 50×50 in.; and when the fourth and last kiln is connected it becomes 56×56 in., and runs this size to the fan inlet chamber.

Dampers should be arranged to cut out any kiln when it is not supplying waste heat, and at each kiln connection a mixing damper or mixing deflector should be arranged to temper the air when starting so as to avoid injury to ducts by heating them up too quickly, as would be the case if air straight from the kiln were drawn through them without tempering. A damper about 50 per cent larger than the main duct should be provided to take air directly from outside into the fan inlet chamber, for it is necessary at nearly all times to draw in large quantities of fresh air directly from the outside to temper that drawn from the kilns. A damper should also be provided in the main waste heat duct at this point to assist in this control.

Dryers are usually constructed with brick walls and should be as nearly fireproof as possible. They are usually 100 to 120 ft. long, the exact length depending upon the length of the brick cars to be used, and about 6 ft. high. The width depends solely upon the capacity, the length having been determined. Generally about 6 ft. 6 in. is allowed in width for each track. The end of the dryer, to which the air is admitted, is called the hot or dry end, and the other end, at which the air is removed, is called the green or wet end. It is into this wet end that the fresh brick are placed and are gradually advanced to the hot end as dry bricks are taken out and fresh bricks put in.

Each brick car holds about 450 brick, at least we will make that assumption for our purpose. The number of cars per day is $100{,}000 \div 450 = 223$. Each car is all steel, is about 7 ft. long, and weighs, unloaded, about 500 lb. A dryer, 115 ft. long, would hold 16 cars in length, and allow 3 ft. clearance. The dryer would be $223 \div 16 = 14$ tracks wide.

Each brick as delivered to the dryer weighs about 9½ lb., and when it leaves the dryer about 8 lb. (which facts should always be investigated for any particular proposition), leaving 1½ lb. water to be evaporated from each brick in the dryer, or $100{,}000 \times 1\frac{1}{2} = 150{,}000$ lb. per 24 hr. (There is an additional amount of water sometimes amounting to ¼lb., which is driven off by "water smoking" in the kiln.)

The average temperature in the dryer is about 145 deg., and the latent heat of evaporation is 1,035 B. t. u., requiring $150{,}000 \times 1{,}035 = 155{,}500{,}000$ B. t. u. per 24 hr. to evaporate the water.

The water evaporated must first be raised from 35 deg. to 140 deg. (the temperature of evaporation), requiring $150{,}000 \times 105 = 15{,}750{,}000$ B. t. u. per 24 hr. for this purpose.

There are 223 cars at 500 lb. each to be raised from 35 to 200 deg. (taking the specific heat of iron at 0.13), requiring $500 \times 223 \times 165 \times 0.13 = 2{,}400{,}000$ B. t. u. per 24 hr. for this purpose.

The clay must be raised from 35 to 200 deg. (taking the specific heat of clay at 0.2), requiring $800{,}000 \times 165^\circ \times 0.2 = 26{,}400{,}000$ B. t. u. per 24 hr. for this purpose.

The radiation from the dryer may be easily figured when the construction is determined. For the purpose of this example we will assume this to be 36,000,000 per 24 hr.

Our total heat losses in B. t. u. are as follows:

	Per 24 hr.	Per hr.
To evaporate moisture	155,500,000	6,500,000
To raise water to temperature of evaporation	15,750,000	657,000
Heat absorbed by cars	2,400,000	100,000
Heat absorbed by clay	26,400,000	1,100,000
Heat lost by radiation	36,000,000	1,500,000
Total B. t. u. per hour		9,857,000

It will, in most cases, be conservative to assume outside air at 60 deg. and 60 per cent relative humidity, but, of course, this varies in different localities. Under this condition each 1 lb. of dry air contains 472 grains of moisture. The temperature at the outlet of the dryer may be taken at 90 deg. with 70 per cent relative humidity. Under this condition each 1 lb. of dry air contains 162 grains of moisture. The difference, $162 - 47 = 115$ grains moisture, is absorbed by each pound of dry air. There are $150{,}000 \div 24 = 6{,}250$ lb. moisture extracted per hour or $6{,}250 \times 7{,}000 = 43{,}750{,}000$ grains moisture per hour. This amount divided by 115 gives 383,000 lb. of dry air per hour $= 6{,}400$ lb. per minute.

The loss in temperature for this amount of air to supply the total required B. t. u. $= 9{,}857{,}000 \div (383{,}000 \times 0.2375) = 112$ deg., which, when added to the outgoing temperature, 90 deg., gives 202 deg. However, as we wish to hold the temperature near the hot end at about 200 deg., it is evident that we could not hold this temperature very far from the air outlets with entering air at 200 deg. For this reason it is usual to add sufficient to this temperature to offset the radiation from the dryer, although this loss has already been included in the total given. This addition would amount to $1{,}500{,}000 \div (383{,}000 \times 0.2375) = 16$ deg., which, when added to 202 deg., gives 218 deg. as the temperature of air entering the dryer.

The loss in temperature from the fan to the dryer may be calculated for any given case, but for our purpose we will assume it at 10 deg., which, when added to 218 deg., gives 228 deg., the temperature of the air handled by the fan.

Now 6,400 lb. air per minute at 228 deg. is 112,000 cu. ft. air per min. handled by the fan. The friction loss in the ducts, etc., will, of course, vary for different plants and for different times in the same plant. As an average, probably ¾ oz. per sq. in. would be the proper friction loss. Assume two fans each to handle 56,000 cu. ft. per min. The 8-blade fans generally used for this work run about 6,600 ft. per min. peripheral velocity, or 110 ft. per sec. We will figure the fan in accordance with a table of properties for such fans prepared by the author and found on page 235 in "Mechanical Equipment of Federal Buildings" (second revised edition), by N. S. Thompson.

In the remainder of this paper the following symbols will be used:

P. V. P. = Peripheral velocity pressure in inches water gauge.

A. V. P. = Air velocity pressure at fan inlet inches water gauge.

S. P. = Static pressure = friction loss inches water gauge.

D. P. = Dynamic pressure = A. V. P. + S. P. inches water gauge.

M. E.=Mechanical efficiency=Air H. P.÷Brake H. P.
K_a=Constant for blast area.
N=Revolutions per minute.
D=Diameter wheel in ft.
W=Width of periphery in feet.
C. F. M.=Cubic air per minute.
t=Temperature of air handled by the fan.
V=Air velocity in ft. per sec.
K_o=Constant for orifice.

Since the peripheral velocity was assumed to be 110 ft. per sec., the P. V. P.$=V^2\div[8\frac{1}{2}(460+t)]=110^2\div[8\frac{1}{2}(460+228)]=2.07$ in. S. P. was assumed to be ¾ oz.=1.30 in. water. S. P.÷P. V. P.=1.30÷2.07=63 per cent. Now refer to the table on the page mentioned, and note that for this ratio the following conditions will exist: Ratio opening=70 per cent.; A. V. P.÷D. P.=21 per cent.; A. V. P.÷P. V. P.=17 per cent.; D. P.÷P. V. P.=80 per cent.; M. E.=41 per cent.; $K_a=3.2$; $K_o=0.55$. The D. P. =2.07×0.8=1.65 in.; the A. V. P.=2.07×0.17=0.353 in.

The diameter of the wheel can be figured by the formula, C. M. F.$=\pi ND^2W\div K_a$. When we substitute 6600 for π DN and W=0.4D (the usual proportion) we get C. F. M.$=(6600\times0.4D^2)\div3.2=825D^2$. Therefore $D^2=56{,}000\div825=68$ and D=8.25 ft.=99 in. Use D=8 ft. 6 in.

The inlet to the fan is usually 0.61 D=62 in. dia. This diameter may be checked against the air velocity as ascertained from the A. V. P. found. The velocity,
$V=\sqrt{\text{A. V. P.}\times8\frac{1}{2}(460+t)}=\sqrt{.353\times8\frac{1}{2}\times688}=44.7$ ft. per sec.=2670 ft. per min. Area inlet=56,000÷2670=21 sq. ft.=3030 sq. in.=62 in. dia. The inlet can further be checked by the formula: Area inlet sq. ft.$=(K_o\times\text{C. F. M.})\div(100\times\sqrt{\text{D. P.}})=(0.55\times56{,}000)\div(1000\times\sqrt{1.65})=23.9$ sq. ft.=3440 sq. in., that is, 66 in. in diameter. This latter formula gives the area of the inlet in the wheel while the other two gave the inlet area in the case. It merely so happened that the experimental data was worked up that way.

The speed would be N$=6600\div\pi D=6600\div8\frac{1}{2}\pi=248$.

The horse power may be found by the formula: B. H. P.=(5.2×D. P.×C. F. M.)÷(33,000× M. E.) =(5.2×1.65× 56,000)÷(33,000×0.41)=35. Use a 40-hp. engine for each fan or one 80-hp. engine for both fans. Preferably use two engines.

If we should desire to use one fan instead of two the diameter of the wheel would be $102\times\sqrt[3]{2}=129$ in., or, say, 11 ft. The speed would be $6600\div(11\times\pi)=190$ r. p. m., and the power would be about the same as for the two smaller fans.

The outlet of each of the small fans would be 58×58 ins. and that of the large fan would be 76×76 in. In either case the main duct from the fan outlets may be 76×76 in.

Generally the main air duct is run across the end of the dryer and just outside of it under the tracks. A plenum chamber is built under the hot end of the dryer for about 65 ft. of its length. It slopes uniformly from the end of the dryer, where it is about 5 ft. deep, to the end near the center of the dryer where it is about 1 ft. deep. Under each track liberal size of openings provided with dampers connect the plenum chamber to the main air duct. The air is admitted to the dryer by multiple floor openings placed under the cars.

A heater should also be installed to heat the air for the dryer when no waste heat is available or when it is insufficient in quantity. This heater should be arranged to use either live or exhaust steam in any number of sections at any time unless the main engines are to run condensing, in which case only a sufficient number of sections to condense the fan engine exhaust may be arranged for exhaust steam.

In extreme weather it is evident we cannot heat the air to 228 deg. with exhaust steam. It is usual to figure on all high pressure steam, except on the sections set apart for the fan engine exhaust, as a basis for calculations, whether the main engines are run condensing or not.

The heat required (assuming outside air at 35 deg.)= 383,000×193×0.2375=17,500,000 B. t. u. per hour. Assuming steam at 100 lb. pressure, air velocity 1200 ft. per min. and 28 pipes deep, the condensation would be $1.68\times\sqrt{20}\times302=2260$ B. t. u. per sq. ft. per hour. Then 17,500,000÷2260=7750 sq. ft.=23,250 lin. ft. of 1-in. pipe. The exhaust steam from the fan engines would amount to about 80 × 40 × 965 = 3,080,000 B. t. u. per hour = 17½ per cent. of the total steam required. Since the heat transmission with exhaust steam is only about two-thirds of that with live steam at 100 lb. pressure, we should add about 9 per cent. to the total above obtained to take care of this deficiency. This would make the total heating surface 25,200 lin. ft. of 1-in. pipe. In this case it will be well to make the heater 32 pipes deep instead of 28. The maximum boiler horse power required would be 17,500,000÷33,300=525.

Now let us examine the amount of waste heat available. A brick, when burned, weighs about 8 lb., and the temperature when waste heat drawing is commenced is about 2200 deg., and the drawing will usually cease when the temperature reaches about 200 deg. Taking the specific heat of the brick as 0.2, the heat available from each brick is about 8×0.2×(2200—200)=3200 B. t. u. As shown above, the total amount of heat required to dry each brick is 17,500,000×24÷100,000=4200 B. t. u. This, it will be noted, is about 30 per cent. above the amount obtained from waste heat, but it is based upon the most extreme conditions with outside temperature at 35 deg., and makes liberal provision for all losses. As most of the brickmaking is done in the Summer it is evident that if we can maintain our schedule reasonably well we shall be able to do practically all our drying with heat that would otherwise be absolutely wasted.

For instance, under the conditions of the example the heat required is to raise the air from 35 to 228 equal to 193 deg. When the outside temperature is 80 deg. the rise in temperature is 228—80=148 deg., and the heat required will be 148÷193=77 per cent. of 4200, or 3300 B. t. u. for each brick. In addition to this, all heat losses with the exception of that required to evaporate the moisture will be reduced from 25 to 50 per cent., which means that the entering air need not be heated to so high a temperature. When all these points are considered it leaves us ample waste heat for practically all brickmaking weather or until the temperature gets down to 45 or 50 deg.

Of course many things are going to happen to upset our schedule of operation, but good management can minimize the amount of steam used for the dryer. Sometimes the discharge flues from the dryer are connected together and run to an exhaust fan to draw the used air from the dryer. These ducts usually run crosswise the dryer at the green end under the tracks with openings in the floor above.

A fan operating under a friction loss of ¼ to ½ oz. may be used for this purpose, for it is evident that its resistance will consist mainly of the friction in the exhaust ducts themselves; as it is scarcely possible, nor is it desirable, to carry much of a vacuum on the dryer as would result if we attempted to assist the main plenum fan to any great extent by this exhaust fan. Its sole object is to insure positive removal of the used air and to keep it moving in the right direction through the dryer. It is really more of a refinement than a necessity. Should such a fan be used it would be conservative to deduct about ⅛ oz., certainly not more than ¼ oz. from the friction load on the plenum fan. This figure about represents the resistance in the dryer proper.

However, there are going to be a great many more dryers built of the type the author has been discussing, as they are cheap to install, simple in operation, and if properly designed and installed are certain to give good results. The dryers are not covered by any patents. Almost every part of it even to the fan casing can be built out of the owner's own product, that is, brick. In view of the immense saving by the use of waste heat, it is difficult to believe, but is nevertheless true, that there are many brick dryers in operation just like the one we have worked out, but minus the waste heat feature.

The drying of tile is practically the same proposition as that of brick. Tiles dry more quickly than brick, the drying time depending to some extent on thickness. The ordinary fire-proofing tile being porous dries very quickly. Of course the schedule for setting, burning, cooling, etc., is much different from brick, and each case should be investigated individually.

In closing I wish to emphasize careful investigation of the schedule upon which it is proposed to operate the plant, the time required for drying and the best temperatures to be maintained. These last two items as well as the time for burning will depend largely upon the kind of clay used.

Iowa's Clay Products Convention

Progressive in Thought, Positive in Action, the Iowa Clay Products Manufacturers Will Gather in Des Moines the 10th, 11th and12th of This Month, and Lay Plans for a Better Future

AT DES MOINES, IOWA, on the 10th, 11th and 12th of this month, the Thirty-Third Annual Convention of the Iowa Clay Products Manufacturers Association, will be in session. Invitations have been issued to as many men of prominence in the clay products field as has been possible, and this announcement is made in the hope that every reader of "Brick and Clay Record" whose engagements elsewhere do not prevent, will make an effort to be among those who will meet and discuss the past, present and future of burned clay.

The Iowa Clay Products Manufacturers Association is progressive in thought. The only reason for delving into the musty past is that the methods and processes that have proven valuable may be preserved, and the faults and failures held up as warnings to those who are, as yet, young in the the industry.

The subjects that will be brought before the convention are such as deserve and receive daily discussion in many clay plants. How to make better ware, without increasing the cost. How to make a larger product without increasing the investment. How to secure a better price without running foul of the Sherman Trust law. How to make money, while turning clay and shale into imperishable brick, block, tile and pipe.

These are subjects that can be talked on without disclosing supposed "secrets"—few manufacturers have discovered the magic words that turn clay to gold by any other process than through making cheaply and selling wisely. Every man's problem is his own, and he does not expect a full solution from a competitor, yet many men, realizing that many problems are mutual, are willing to discuss them, and, oftentimes, tell what they are doing to arrive at a satisfactory solution.

The program follows and shows that Secretary Platt is providing just as high class a mental feast as a larger and more pretentious body is expected to do:

WEDNESDAY, DEC. 10th. 10 A. M.
OPENING.

1. President's Annual Address, H. R. Straight, Adel, Ia.
2. Testing Drain Tile. Prof. A. Marston, Dean of Engineering Department, Iowa State College, Ames, Ia.
3. The Cost of Production Now and Ten Years Ago, D. F. Morey, Ottumwa, Ia.
4. Keeping Down Cost; Watching Quality, H. L. Tramp, Creston, Ia.
5. The Open Price System, Iverson C. Wells, Editor "Brick and Clay Record," Chicago.
6. General Discussion on Raising Quality Standards.

WEDNESDAY P. M. 2 O'CLOCK.

1. A Manufacturers' "Territory," J. L. Platt, Jr., Van Meter, Ia.
2. Advertising; How It Can be Used Profitably to Increase the Business of the Individual Manufacturer, Paul B. Lessing, Des Moines, Ia.
3. The Wise Man and His Profits, W. U. Turpin, Ft. Dodge, Ia.
4. Lowering Cost of Insurance by More Fireproof Factory Construction, O. W. Follett, Home Ins. Co., Des Moines, Ia.
5. The New Short Course for Clay Products Manufacturers at Iowa State College, J. Will Parry, Ames, Ia.

Evening meetings of Tile, Block and Brick Manufacturers will be arranged for.

THURSDAY A. M. 10 O'CLOCK.

1. A Talk on Clayworking in Iowa. Dr. S. W. Beyer, Iowa State College, Ames, Ia.
2. Discussion of Clay Roofing Tile, Chas. Stolp, Des Moines, Ia.
3. Pushing the Use of Hollow Tile in Fireproof Construction, F. Titteringon, Rock Island, Ills.
4. Local Advertising; How It Builds a Demand. C. R. Madson, Algona, Ia.
5. Discussion of Different Methods of Burning.

THURSDAY P. M. 2 O'CLOCK.

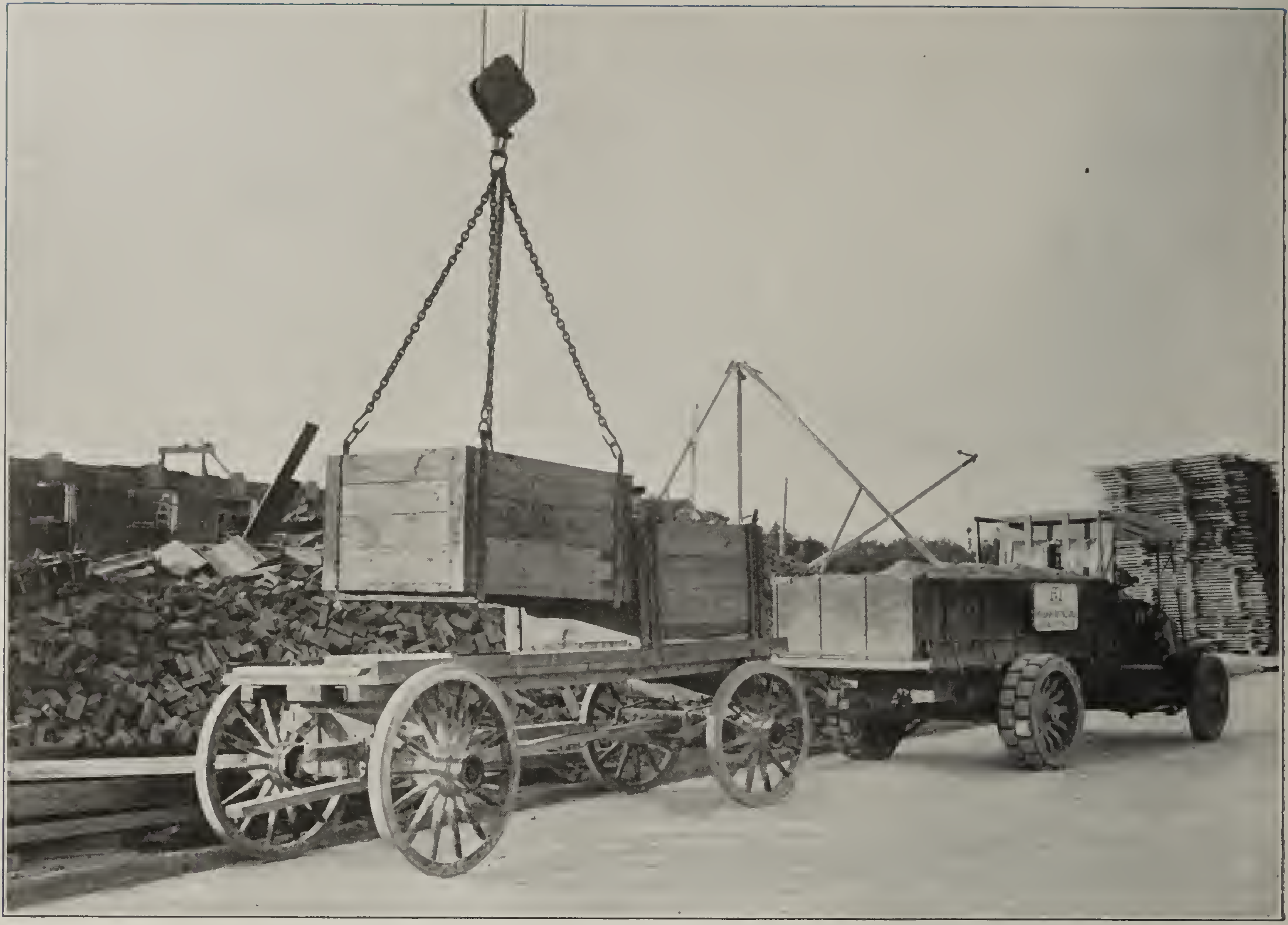
1. Permanent Farm Buildings, Prof. J. B. Davidson, Iowa State College, Ames, Ia.
2. A Discussion of the Farm Market for Clay Product, T. W. LeQuatte, Adv. Mgr. Successful Farming, Des Moines, Ia.
3. The Use of Producer Gas in Burning Periodic Kilns, I. M. Justice, Dayton, Ohio.
4. Why Direct Selling is Not Desirable, Either as Affects the Manufacturer or the Consumer, C. L. Smith, Mason City, Ia.

Entertainment will be provided for Thursday evening. Either a subscription banquet or theatre party. Write stating your preference.

FRIDAY A. M. 10 O'CLOCK.

1. Clay Products Manufacturers' Reciprocal Insurance, R. C. McMahan, St. Louis, Mo.
2. The Principles and Application of Smokeless Combustion, E. W. Wagenseil, Des Moines, Ia.
3. Pointers on Routing and Other Freight Matters, Walter Huenke, Traffic Mgr., Iowa State Mfrs. Association, Des Moines, Ia.

Reports of Committees.
Report of Secretary and Treasurer.
Election of Officers.
Adjournment.



This is a Peerless truck with trailer, unloading brick "on the job." It is a true form of economy employed by Samuel Austin & Son, Cleveland, who say it has paid for itself in the five months they have used it. Wagon trailers are used, these being loaded while the truck is on a trip. Mile hauls on a 9 per cent grade are made, hauling about 10 tons per trip and making round trips hourly.

Motor Trucks Cheapen Brick Haulage

By F. W. Davis

Itemized Record of Autos Show Short Hauls Are as Profitable as Long Ones

Professional trucking concerns may often make profitable use of the power wagon over short distances. Most people imagine that the motor truck is profitable only on long hauls. This article, reprinted from "Power Wagon," shows how a five-ton machine was able to make a vastly better showing on short hauls than on long hauls. This is possible on account of the unscientific methods of haulage charges at present employed in the class of work considered. It shows the necessity for readjusting charges in certain kinds of contract haulage.

WHEN motor trucks first made their entrance in the commercial field and began superseding horses in various lines of work, they were considered chiefly as a mechanical means of overcoming the fatigue from which the animals naturally suffered under continuous work. However, as their application became more extensive the problem grew in importance and changed considerably in its nature. The problem became not so much one of replacing horses with mechanical power as to devise better and more efficient means of handling different kinds of material in connection with transportation. For this reason motor wagons were not at first utilized in certain fields, and only recently has a concerted study been made to adapt them to lines of business where the internal work, meaning the loading and unloading, was the principal factor. Therefore, the problem became one of devising better methods of handling before there was a possibility of supplanting horses with motor trucks. In no other line of business has this problem been more difficult of solution than in the handling of bricks. Consequently, the writer feels that a distinct step in advance has been made in Chicago where this problem has been successfully worked out.

The class of bricks under consideration are known as rough building bricks and before attempting to show how they were handled it may be well to look into the method of manufacture in order to properly analyze the problem under discussion. The process of manufacture is as follows: Clay is dug from the ground with a steam shovel or dredge, or by some other means, and is then carried up to the crushing rolls which squeeze it and break up any particles of grit which may be contained therein. From here the fine clay is carried to a machine which kneads it together and at this stage a certain amount of dry sand and crushed brick is added in order to get the proper density before it is molded into form. The brick machine consists of a very coarse screw, which revolves continuously within a retainer into which the clay is fed from the top. The clay is carried forward by this revolving screw and then forced out, under great pressure, through a die which is the exact size of one end of a brick. This is a continuous process and the clay comes out of this die at the rate of 15 or 20 feet a second. From the die this mass of clay is carried on an endless belt to the cutter, consisting of a frame with cross wires, which revolves continuously and cuts through the clay as it passes. After the bricks are cut they are carried on another conveyor and pass by eight or ten men, who lift off the bricks and place them on small steel cars, with platforms approximately 3 by 6 feet in size. When these cars are loaded with seven layers of bricks they are wheeled into the drying room where the wet bricks are subjected to a drying process which removes practically all the moisture. From the drying room they are then taken to the kiln where they are stacked in the kiln by means of a Penfield setter.

The Penfield Setter is a great labor saving device and may be described as follows: Lengthwise of the shed are located the tracks for an electric crane, extending all the way across the shed and at a height sufficient to clear the bricks after they are stacked. Attached to this crane is a peculiar device known as a Penfield setter. This setter consists of thirteen long prong-like projections. These are held horizontally and approximately five inches apart in the form of a large fork. On the sides of these arms are small expanding clamps so arranged that when the setter is pushed underneath a load of bricks on a drying car and then raised by means of the crane, each clamp expands and clamps the brick immediately adjacent. In this manner a complete unit of bricks, consisting of about 840, can be lifted free from the car and carried up into position on the kiln and released. With this device it is possible to stack about a thousand bricks a minute, which is an immense saving over the old hand method, whereby it was necessary to relay the bricks from hand to hand in order to get them up on the kiln.

After the kiln, usually made up of at least a million bricks, is stacked, the sides and ends are covered with clay to prevent the heat from escaping when the kiln is burned. The next operation consists in burning the bricks. This is done by means of a series of oil burners placed along one side of the kiln. These oil burners are assisted by a steam blast and it is but a very few hours before the complete mass of bricks are at a red heat. This burning is continued for approximately 72 hours. The clay in the bricks has changed entirely in nature. The dried bricks were gray and resembled common mud. The burned bricks are hard, reddish yellow in color and emit a clear ring when struck. The bricks are now ready for shipment and the usual practice is to start at one end of the kiln and work toward the other end, loading into box cars and wagons as fast as 15 to 20 men can work. Bricks are loaded into box cars by placing a long strip of sheet iron alongside the kiln on which to run a wheelbarrow, wherein the bricks are carried into the box car. The men are paid approximately 42 cents per thousand for loading bricks in this manner.

With the other method the wagon driver picks up eight bricks at a time and throws them onto the bed of his wagon. The men become quite expert at this work and can load 1,500 bricks in approximately 20 minutes. It is unnecessary for the driver to count the bricks as he throws them into the wagon for the reason that when the stack reaches a certain height on the sides of the wagon, he knows he has a load of 1,500. The driver then proceeds with the delivery and unloads by lifting out the side boards and tossing the bricks off the wagon. The rates which contracting teamsters are paid for hauling bricks are as follows:

	Per M.
Under a two-mile haul	$1.20
Under a three-mile haul	1.35
Under a four-mile haul	1.50

Added to this rate is an additional cost of 15 cents per thousand for tossing. This is the extra price which is paid to helpers at the kiln who assist the drivers in loading.

In devising means for handling these bricks on a truck the point which immediately suggested itself was the possibility of using this traveling crane to facilitate loading. From measurements of the unit of bricks and the weights, which show that a unit of bricks consisting of 840 weighs approximately 3,350 pounds, it was evident that three units would make up a load of five tons, and a truck body 6 by 9 feet would accommodate this load. A difficulty presented itself at this point, however, as the Penfield setter would not handle bricks which had been burned. It appeared that the clamps would not hold against the hard surface of a burned brick. Consequently, it was necessary to adopt a setter constructed of plain forked arms without clamps, placing the brick units on racks constructed with cross stringers to accommodate this fork, and to put stringers on the truck platform in order to release the fork from the load. The outfit then consisted of three racks constructed as indicated above and the truck body containing stringers, a hinged rear gate, and the body arranged to dump at the rear.

With this equipment it was necessary to have two men at the kiln to load the racks which were placed on any part of the kiln. The extra allowance of 15 cents per thousand for tossing bricks in connection with team hauling, previously alluded to, would easily cover the cost of stacking bricks on the racks, consequently this labor will be considered separate from the truck. After these racks are stacked the fork and traveling crane can readily transfer a unit of bricks onto the truck bed in less than a minute. Accordingly, the time necessary to load 2,500 bricks is five minutes. From the results of the demonstration one can not expect to maintain this rate for the reason that a new device of this kind is always subject to delays, which can only be overcome by investigation and experience. Some delay was experienced in not having the racks loaded when the truck would return from a trip. Also, there was considerable delay in not having the crane ready to load the truck on its arrival at the brick yard. These matters could be easily remedied when the work is done on a large scale.

The chief handicap under which the truck worked was the fact that at this particular time there was not sufficient work to keep the truck in operation ten hours a day. To further illustrate the variation in conditions it was found that the loading time varied from eight minutes to 1 hour and 42 minutes with an average of 13 minutes. The unloading time varied from five minutes to 1 hour and 25 minutes with an average of 14 minutes. It should be said in this connection that in dumping a load, the bricks were absolutely uninjured, and were left in a pile approximately four feet high in the center. To illustrate the condition of the bricks in dumping it might be said that the building contractor who was receiving some of them stated to the writer that this method of handling was the greatest improvement he had witnessed since the adoption of the Penfield setter, and further remarked that he would like all his bricks delivered by motor trucks. The running time was consistent, the truck averaging approximately 12 miles an hour the entire time it was in operation. The reason for this relatively high speed was the fact that the truck was governed at 13 miles an hour and the hauling was done in a district where there was no congestion of traffic.

Results on Short Haul Work.

The work during this demonstration took place at two different brick yards; first under short haul conditions and then under long haul conditions. Table I shows results on the short haul work where the average radius of haul was 3.8 miles.

TABLE I.

Date.	Time Truck was in Service.	Mileage.	No. of Bricks Delivered.
July 10	7 hrs. 58 min.	18	7,500
July 11	10 " 47 "	51	22,500
July 12	9 " 15 "	42	17,500
July 13	4 " 57 "	15	7,500
July 15	10 " 35 "	44.5	17,500
July 16	5 " 2 "	27	10,000
July 17	7 " 1 "	35	15,000
July 18	7 " 25 "	33.4	12,500
July 20	2 " 36 "	16.7	5,000
July 22	6 " 27 "	31.4	10,000
July 23	8 " 42 "	46.5	12,500
July 24	8 " 10 "	41.8	12,500
July 25	8 " 26 "	41.2	12,500
July 26	9 " 20 "	48	12,500
July 27	7 " 25 "	38.8	12,500
July 29	11 " 55 "	85.9	12,500
Total	126 hrs. 1 min.	616.2	200,000
Average per day	7 " 52 "	38.5	12,500

The interesting feature of Table I is the comparatively short time each day that the truck was in service. This accounts for the unusually small number of bricks hauled and was a matter which lay entirely outside of the work of the truck. On July 11 the truck worked 10 hours and 47 minutes, and hauled 22,500 bricks. On July 20 the truck worked 2 hours and 36 minutes and hauled 5,000 bricks. Consequently, the number of bricks hauled was in direct proportion to the amount of time the machine was in service.

Results on Long Haul Work.

Table II gives the results where the truck was working on an average radius of 8.3 miles.

TABLE II.

Date.	Time Truck was in Service.	Mileage.	No. of Bricks Delivered.
Aug. 2	10 hrs. 55 min.	81.8	10,000
Aug. 3	9 " 20 "	64.8	10,000
Aug. 5	10 " 40 "	92.2	12,500
Aug. 6	11 " 4 "	81.5	12,500
Aug. 7	10 " 6 "	73.4	10,000
Aug. 8	9 " 55 "	49.5	10,000
Aug. 9	2 " 25 "	17.5	2,500
Aug. 10	7 " 45 "	49.5	7,500
Aug. 12	9 " 20 "	67.5	10,000
Aug. 13	10 " 0 "	53.8	10,000
Total	91 hrs. 30 min.	631.5	95,000
Average per day	9 " 9 "	63.1	9,500

In ten day's time the truck delivered 95,000 bricks or an average of 9,500 bricks each day. August 5 and 6 it delivered a maximum of 12,500 bricks. August 9 it delivered a minimum of 2,500 bricks. By referring to the time the truck was in service during these days the reason for this variation is immediately apparent.

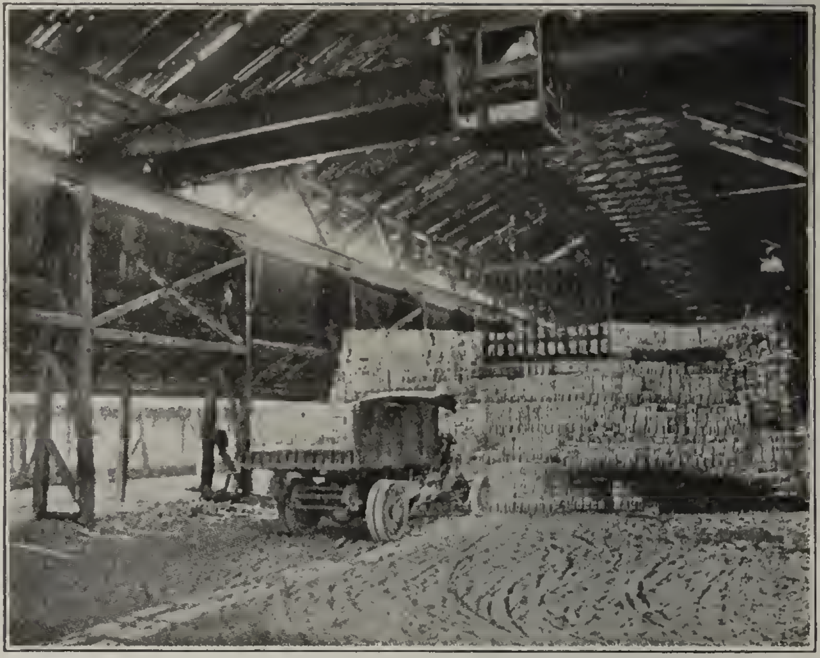


Fig. 2—Pierce-Arrow truck completely loaded in kiln of Illinois Brick Co., Chicago. The three empty racks can be seen in the background on the kiln.

Cost of Hauling by Motor Wagon.

The cost of hauling is shown in Table III. The charges for insurance and garage storage may seem low. In this connection it should be remarked that the truck was not operated in the city and certain insurance items ordinarily chargeable could therefore be omitted. For the same reason, the garaging cost much less, and furthermore, this figure was based on mere storage of the truck as the driver took care of the washing and polishing.

TABLE III.

Investment in truck	$5,000:00
Interest at 5 per cent per annum	250.00
General insurance	175.00
Garage at $12 per month	144.00
Driver at $20 per week, 50 weeks	1,000.00
Fixed charges per year	$1,569.00
Fixed charges per day (300 working days)	5.23
Cost Per Mile.	
Tires—8,000 miles at $488.95	$0.06110
Gasoline—4½ miles per gallon at 10c	.02200
Lubrication—	
Motor, 250 miles per gallon at 50c	.00240
Transmission, 1,000 miles per gallon at 65c	.00065
Rear axle, 1,000 miles per gallon at 65c	.00065
Allowance for daily repairs and overhaul (maintained and overhauled at 15,000 miles)	.03500
Depreciation at 150,000 miles	.02870
Total operating expense, one mile	$0.15050

Analysis of Results.

The summary of results in Table I would indicate that the total cost of hauling 200,000 bricks an average radius of 3.8 miles amounted to $176,42. This is at the rate of $.88 per thousand. The total cost of delivering 95,000 bricks in Table II amounts to $147.43. This is at the rate of $1.55 per thousand. The same work to be done by horses would cost in the first place $1.50 per thousand and in the second place approximately $2.10 per thousand. In the first case, this represents a saving of 41.4 per cent by motor truck over horses, and in the second case 26.2 per cent; although this latter work is very seldom attempted with teams, the method being to ship in a box car and then deliver from the railroad siding to the job by team.

Realizing that the truck during this demonstration did not work the equivalent of ten hours a day, let us assume for comparison that the truck did work the full ten hours each day. At this rate the results would be as follows:

Radius of haul, 3.8 miles.
Truck works 10 hours per day; 6 days per week.
Truck makes 7 trips per day.
Truck hauls 17,500 bricks per day.
Total cost of truck, $13.35 per day.
Cost per M. of bricks, $0.76.

On the same basis the results of the long haul work would be as follows:

Radius of haul, 8.3 miles.

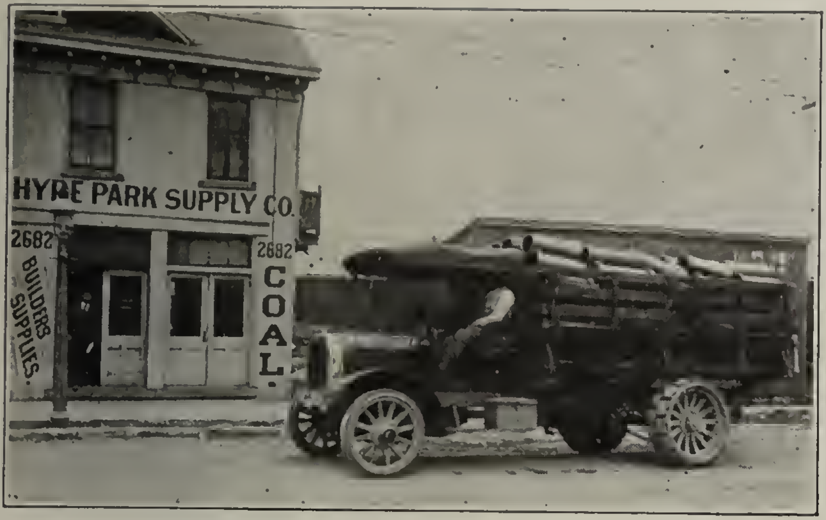


Fig. 3—Peerless truck in use by the Hyde Park Supply Co., Cincinnati. They say they use this truck over hilly grades and horses cannot do the same work. They have had it a year and declare horses cannot replace it.

Truck works 10 hours per day; 6 days per week.
Truck makes 5 trips per day.
Truck hauls 12,500 bricks per day.
Total cost of truck $17.72 per day.
Cost per M. of bricks, $1.41.

From a careful analysis of the work which the truck accomplished it can be seen that by avoiding unnecessary delays the truck can reach a still better capacity than that indicated above. Table IV shows the work which it is possible to get from a truck hauling bricks under present conditions. The figures are based on the assumption that the truck will work on an average 9 hours and 15 minutes out of a ten-hour day, and that the speed of the machine will average ten miles an hour while in operation. Loading time is taken as ten minutes and unloading time as five minutes where the body is equipped with a power hoist.

TABLE IV.

Radius of haul in miles.	Average number of loads hauled per day.	Miles per day.	Bricks hauled per day.	Cost per day.	Cost per M.
1..........	20.	40	50,000	$11.00	$0.22
2..........	14.	56	35,000	13.65	0.39
3..........	10.8	65	27,000	14.85	0.55
4..........	8.8	70	22,000	15.62	0.71
5..........	7.4	74	18,500	16.28	0.88
6..........	6.4	77	16,000	16.64	1.04
7..........	5.6	78	14,000	16.94	1.21
8..........	5.0	80	12,500	17.25	1.38
9..........	4.5	81	11,250	17.32	1.54
10..........	4.1	82	10,250	17.52	1.71

On comparing the team rate of hauling bricks with the results indicated in Table IV it is found that the percentage of saving by motor trucks over horses is as follows:

Radius of haul 2 miles, motor wagon saves 67.5%.
Radius of haul 3 miles, motor wagon saves 59.3%.
Radius of haul 4 miles, motor wagon saves 52.7%.

From these results it is evident that the desirable hauling for trucks in comparison with teams is the short haul work. This is an unusual result because most people imagine that the only profitable work for a truck is on long hauls. The explanation lies in the fact that the rates for hauling brick by teams are entirely arbitrary and are not based on a scientific foundation.

Table IV will be valuable for reference purposes in that it shows what a five-ton truck can be expected to do in brick hauling under conditions such as exist in and around Chicago. It is a standard of efficiency for truck work and when trucks in this service fail to approach this standard the cause should be immediately ascertained and corrected. Further than this, the table is valuable in comparing the cost between hauling bricks by trucks and by railroad. It is admitted that where bricks are to be transported a considerable distance, the freight car has the advantage, and by comparing this table with the freight car charge, plus the team rate, the maximum radius for profitable truck hauling can be determined.

During the coming year Chicago will use in the neighborhood of 900,000,000 rough building bricks. Does it require a vivid imagination to grasp the enormous saving that can be made in this branch of hauling by substituting motor wagons for the old fashioned expensive horse methods? The saving in transportation costs in a year and a half would pay for a motor truck equipment large enough to handle this gigantic business. This is the situation today and the results of tomorrow will furnish the proof.

The Strength of Steel.

"The Strength of I-Beams in Flexure," by Herbert F. Moore, has just been issued as Bulletin No. 68 by the Engineering Experiment Station of the University of Illinois. The formulas commonly used by architects and structural engineers for determining the load-carrying capacity of structural steel shapes are, in general, based on the common theory of elasticity and the tensile strength of structural steel. In figuring the strength of I-beams under transverse loads it is the usual practice to consider only the direct flexural action. Transverse tests of I-beams have not been numerous, and the results of such tests have not been widely used. It is known that besides direct flexural action in an I-beam there are also sidewise bucking action and stresses in the web. In this bulletin these secondary effects are discussed and tabulated summaries given of the results of tests of I-beams at Illinois and elsewhere. From the results of tests the conclusion is drawn that in considering direct flexural action of I-beams the yield-point strength of the material must be regarded as the ultimate fiber stress for the beam. From the results of tests proposed formulas for strength against sidewise buckling and for strength against web failure are deduced. Copies of Bulletin No. 68 may be obtained upon application to the University.

Gets Polished Effect With Glauber Salts.

A potter had a request for a large vase to be made in imitation of an old Roman one in his possession, the latter being so beautifully polished as to appear to have been glazed. The cost of polishing being out of the question, the clay, of which the new vase was made, was mixed with a solution of Glauber salt instead of plain water, and the pot was not touched by hand from the moment it was set aside to dry. The results in this case were quite satisfactory, but the process is quite inapplicable commercially, and the results are always uncertain.

Setting Brick in the Kiln.

It is not considered expedient to set brick close up to the arch above the bag-wall level. It is an essential of good burning to allow the flame of the fuel free space in which to burn itself out. This method of setting would result in placing 16 brick end to end across the kiln, 90 side by side lengthwise of the kiln, and an average of 21 courses high, total 30,240. The wickets must be walled up at least 1½ brick thick, and preferably two brick thick, with an empty space between the two 9 in. thicknesses, and both should be plastered with soft pug.

Ancient Samian Vases Not Glazed.

The ancient Samian vases and other red wares which appear to be covered with a red glaze are not glazed in the literal meaning of the term. As a matter of fact, they are polished when partially baked and then are returned to the kiln and the firing finished.

New Methods and Processes

A Department of Technology Wherein Recent Experiments and Discoveries Are Exploited for the Benefit of the Clayworker Who Wishes to Keep Abreast of the Time

Edited by

Charles S. Kinnison

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Contributing Editors: Prof. Charles F. Binnis, Ellis Lovejoy, C. E., Anton Vogt, C. E.

IN determining the value of a fire clay it is obvious that it is important to consider the purpose for which it is to be used. Thus it would be absurd to require high refractoriness for clays to be made into bricks which are to go into the top of a blast furnace lining where resistance to abrasion at a low temperature is the consideration. In other words, we must clearly recognize the conditions to be met. It also is evident that plastic bond clays cannot in the nature of the case be expected to come up to the refractoriness required of the flint clays, which constitute the bulk of the mixtures.

This discussion will be confined mainly to the question of refractoriness, which constitutes, after all, the principal demand made of fire-clay products. Other desirable physical properties may often be obtained by proper treatment in the manufacturing process, such as the correct proportioning of flint, plastic fire clay and grog, with reference to sizing and intimacy of mixture, and especially the degree of firing.

Testing Methods.—The testing methods available for the examination of fire clays are the direct determination of the softening temperature, of the temperature-porosity relation, and chemical analysis. In attempting to put down specific requirements to be met by fire clays at least two classes must be distinguished: No. 1 fire clays of high refractoriness and No. 2 clays of somewhat inferior refractoriness, but necessary as bonding material. While it would be highly desirable that the No. 1 clays be as plastic as possible, the requirement as to plasticity becomes an urgent one in the case of No. 2 fire clays, since without well developed bonding quality, the latter become practically valueless.

With reference to the No. 1 clays an arbitrary minimum refractoriness must be assumed.

From the numerous tests made by Bleininger and Brown with American materials, it seems that this limit for the softening temperature should be put at Cone 32. In testing a clay of this type in the Deville or in an electrical furnace in comparison with standardized Seger cones its degree of softening should correspond to the No. 32 Cone.

Limits of RO. Constituents.—As regards the chemical composition of fire clays attention has already been called to the effect of the various constituents of clays. The effect of the total basic fluxes, RO, it has been seen, becomes very prominent at about 0.2 molecular equivalent as expressed in the empirical formula commonly employed in ceramic studies. In these formulae alumina is made equal to unity. To calculate it from the results of the chemical analysis divide the per cent of each component by its molecular weight. Add the equivalents of K_2O, Na_2O, CaO, MgO and FeO thus obtained. Divide the alumina equivalent into the total RO and the SiO_2 equivalents.

The method of calculating the formula of a clay from its chemical anlysis, was explained more fully in the August 1 issue of "Brick and Clay Record." The result is an expression of the type x RO 1 Al_2O_3 y SiO_2, in which the value of x should not exceed 0.2 for a No. 1 fire clay.

There is of course no sharp distinction between the No. 1 and the No. 2 fire clays and any lower limits that may be set must be, in the nature of the case, arbitrary. From a detailed study of the firing behavior of stoneware and other plastic clays, it seems that cone No. 28 might be considered the limit below which a satisfactory bond clay should not soften. Clay possessing a lower softening point may, of course, be used to bond the high grade flint clay, but the result, in spite of the fact that the high grade clay is far in the excess of the low grade material, does not make for high quality. In many cases it would be advisable to improve the standing up quality of the bond clay by intimate grinding and admixture with flint clay.

As to the chemical composition it might be said that 0.3 equivalent RO should in no case be exceeded.

Curious Property of Clay.

It is well known that plastic clays absorb (or remove from solution) (a) dissolved colloids, (b) complex dyestuff which have been shown to be polymerised colloids, (c) the CO_3 and HCO_3 ions of carbonic acid, B_4O_7 ions from tetraborates, PO_4 ions from phosphates, the cations being exchanged for those in the clay, (d) unsaturated hydrocarbons which appear to enter into combination, and (e) all kinds of odors and many gases.

Apart from P. Rohland, no one has ever published any explanation of the odor of clays, and of their characteristic taste; Rohland assumes that it is due to organic matter which in analyses is included in the loss on ignition, which, in the case of china clay, is about 14 per cent. He further suggests that this organic matter has undergone bacterial, or fermentative decomposition, and that the clay has absorbed and retained the odor which was produced at the time the decomposition occurred. Indeed, he regards the kaolins as among the most sensitive absorbents of odors.

Although plastic clays absorb mainly dyestuffs, and no crystalline colors, there are some presumably colloidal colors which they do not remove from solution. One of these is the brown coloring matter in the effluent from cellulose sulphite works. The nature of this coloring matter is unknown, but if it is oxidized by passing a current of air through the effluent and potassium ferrocyanide is added a characteristic blue color (Berlin blue), due to the formation of ferro-ferricyanide is produced. This blue color is readily absorbable by plastic clays, as it is known to be a colloidal nature.

In pointing out this curious behaviour of clay, Dr. Rohland very wisely points out that the fact that clays can absorb colloidal substances is of great importance in the solution of a number of problems dealing with plasticity. —"Brick and Pottery Trades Journal."

Treat on Burning Clays.

The Bureau of Standards has published four technologic papers which are of particular interest to clayworkers. Technologic Paper No. 17 is devoted to "The Function of Time in the Vitrification of Clays," in which the length of firing is connected with the temperature, with reference to obtaining the same degree of density. The fact is brought out very clearly that within certain limits, the same results may be obtained by burning clay at a lower temperature as at a higher temperature, by continuing the time of firing. Some important conclusions are arrived at, both in connection with clays and with cones. It has been shown that the latter indicate higher or lower temperatures, according to the rate of firing, and the actual temperatures reached under varying conditions have been determined.

Technologic Paper No. 21, "The Dehydration of Clays," deals with the particular function exercised by the chemically combined water in clays. It has been shown that this constituent of clays does not leave at a fixed temperature but during a well-defined temperature interval.

Technologic Paper No. 22, "The Effect of Overfiring upon the Structure of Clays," is concerned with the development of a spongy structure so well known to many clayworkers, and methods have been outlined which enable anyone to obtain definite knowledge concerning his particular material.

Technologic Paper No. 23, "The Technical Control of the Colloidal Matter of Clays," represents a resumé of the work of the late Mr. Ashley, and brings out distinctly the remarkable changes to which clays are subject when treated with small amounts of different reagents, as in casting.

All of these technologic papers may be obtained, free of charge, by writing to the Director, Bureau of Standards, Washington, D. C.

Flameless Surface Combustion.

Surface combustion is employed with very satisfactory results in cases where an oxidizing or neutral atmosphere is required, or at any rate where it is not objectionable. It is especially adapted to firing steam boilers, to many metallurgical processes and to technical investigations of various kinds.

The method employed is very simple. It is as follows: Gas is directed through a porous substance, or some refractory granular material and ignited at the surface of exit. Then the supply of air is regulated until the proper amount is mixed with the gas for complete combustion, when the flame will disappear, but the surface will be maintained in a state of red hot incandescence, as long as conditions remain unchanged.

The advantages claimed for this method of combustion are as follows: The combustion is greatly accelerated by the incandescent surface and may be concentrated just where the heat is required; the combustion is perfect with a minimum excess of air; the attainment of very high temperatures is possible without the aid of elaborate regenerative devices: and by reason of the large amount of radiant energy developed, transmission of heat from the seat of combustion to the object to be heated is very rapid. The efficiency is high and the heat under close control.

The Development of Sand Lime Brick Plants

The following table shows the number of plants manufacturing sand lime brick during the past ten years and the value of their output.

Year.	Number of Plants.	Value of Output.
1903	16	$ 155,040
1904	57	463,128
1905	84	972,064
1906	87	1,170,005
1907	94	1,225,769
1908	87	1,029,699
1909	74	1,150,580
1910	76	1,169,153
1911	66	897,664
1912	71	1,170,884

It will be noticed from this table that in the year 1905, when 84 plants were in operation, their average yearly output was about two million bricks, assuming a valuation of $6 per thousand. The most favorable year, both from the standpoint of the number of plants in operation, as well as of the value of the product, was 1907. Assuming the same value per thousand brick, that is, $6, it is seen that the average yearly output for each plant was 2,170,000, showing that the plants were not very large.

The successful year, 1907, was followed, as is often the case, by a depression. During a very successful season, mistakes are often and easily made in the erection of new plants, the subsequent slow activities in building operations not supplying an adequate business to an increased number of plants. The result naturally is that some are compelled to suspend operation, as the figures show, there being only 71 active plants in 1912.

Again assuming a value of $6 per thousand, in 1912 each plant had an average output of 2,750,00, showing that the plants built have under favorable conditions, gradually increased their output.

The table given below shows in what states the plants of the United States are located and the value of their output in 1912. Included in the column marked "Miscellaneous" are tile and ornamental pieces, which are made in plaster molds.

States.	No. of active plants.	Building Brick. No. of M.	Value ($)	Face Brick. No. of M.	Value ($)	Miscellaneous.	Total Value.
California	5	1,511	$12,635	1,395	$20,875	x	$33,860
Col., Mon., Wash.	4	1,622	9,732	585	9,915	..	14,647
Conn., D. C., Md. and Mass.	5	6,478	57,020	3,755	30,209	x	92,659
Florida	5	16,216	110,436	x	x	..	121,378
Ga., Ky., Miss. and Ohio	4	10,463	61,294	x	x	..	63,878
Idaho	3	1,688	19,677	x	x	x	25,121
Indiana	3	12,056	59,929	...	...	..	59,929
Ia., Kan., Neb., N. D., Oklahoma and Texas	8	11,684	90,265	...	...	..	96,450
Michigan	11	43,949	277,769	x	x	..	287,393
Minnesota	4	19,232	109,765	262	3,020	..	112,785
New Jersey	4	760	4,440	x	x	..	6,924
New York	5	19,858	123,500	x	x	..	128,700
Pennsylvania	3	6,365	36,970	...	...	..	36,970
South Dakota	3	1,780	14,395	...	...	..	14,395
Wisconsin	4	10,498	70,265	x	x	..	70,795
Total in states	..	.....	......	4,244	$42,375	5,900	......
Totals	71	161,140	$1,058,590	.....	......	5,900	$1,170,884
Average price per M			$6.45	.....	$10.41	.....	......

The output of sand lime brick in the United States seems rather small when we compare it with that of Germany. For example, the plants located in and around Berlin alone manufacture yearly about 200,000,000 or more than the total output of the United States.

Questions and Answers

A Department for the Solution of the Knotty Problems Confronting the Clay Worker

This department was inaugurated to be of material benefit to the readers of "Brick and Clay Record" and no charge is made for the service given. The advice of the world's recognized authorities in ceramics is offered to clayworkers who are invited to avail themselves of the opportunity to have their problems solved here. Should a reply be desired by letter enclose a stamped and addressed envelope for reply.

The Next Clay Show.

220. *Chicago—Will you tell us where the next Clay Product Exposition will be held? We also would appreciate it if you will give us a list of the allied trades organizations with the dates and places of their next annual convention.*

The next Clay Product Exposition will be held in San Francisco at the Panama Exposition. The 1914 Show, therefore, will be omitted, it being the desire of the Exposition Company to conserve its resources and erect a permanent clay products building at the Panama Show. This building will be open the entire year of 1915 and will house an international exhibit as well as afford ample accommodations for conventions and meetings of the various organizations. It probably will be the greatest attempt by any industrial body in the way of making an industrial display.

The National Brick Manufacturers' Association will hold its next annual convention, March 2 to 7, 1914, at New Orleans, La.

The American Face Brick Manufacturers' Association and the Face Brick Dealers' Association will meet at French Lick, Ind., Dec. 10 to 12, 1913.

The National Paving Brick Manufacturers' Association already has held its annual convention, this being at Cleveland in October.

The Iowa Clay Manufacturers' Association will hold its annual session in Des Moines, Dec. 10, 11 and 12. C. B. Platt, Van Meter, Iowa, is the secretary. The Illinois Clay Manufacturers' Association will hold its annual convention late in January at Champaign, Ill., but no definite date has been announced. A. E. Huckins is secretary.

None of the other conventions have been announced but we expect to be able to print a list in an early issue.

Amortization of Bank Indebtedness.

243. *Tennessee—What is the meaning of amortization, as applied to bank indebtedness? I heard a lecturer use the term and from what he said, think he believed it to be a panacea for all industries that were handicapped by amounts due to local banks, particularly short time notes.*

Webster defines amortize as follows: "To extinguish, as a debt, usually by means of a sinking fund." This is, we admit, not very enlightening. The process of amortization, as pursued in France (where it is extensively used in connection with farm mortgages) is very simple. Let us suppose that the mortgage is for $1,000, and bears quarterly interest of 1½ per cent. The borrower, under ordinary conditions, would pay $15.00 every three months, and, when the mortgage came due, would still owe the $1,000. The principle of amortization would be applied, if the borrower made arrangements whereby he could pay, say, 2½ per cent quarterly, or $25.00. At the end of the first quarter, having made this payment, he would owe $990.00. One-and-one-half per cent on that amount would be $14.85. At the end of the second quarter, paying $25.00 would reduce the amount of the mortgage to $979.85. Add interest to this, as before, and pay $25.00 at the end of the third quarter, and the indebtedness would be $969.54. At the end of the first year, the payment of $25.00 would make the indebtedness $959.08. From this it will be seen that while $40.00 has been paid back in four installments of $10.00 each, the indebtedness has been reduced 92c, representing the interest earned. The idea is, that the amounts paid back are so small that they will not embarrass the debtor, but, if persisted in, will eventually wipe out the original debt. When the same plan is tried with notes, it works very smoothly, for, as the note is renewed, the check for the interest, plus the amortization amount, is given at the same time as the renewal note, with the amount of the latter a little less each time, than the amount of the note that is being taken up.

Interested in Sanitary Work.

231. *New Jersey—Have you any good literature on the manufacture of wash trays, sinks, and bath tubs? I am interested in this kind of clay work and would be willing to buy some good literature.*

"Pottery and Porcelains of the United States," by Barber, is listed in our Book Department and the price is $3. It covers the ground pretty thoroughly. Thomas Maddock's Sons Co., Trenton, N. J., who claim to be "the oldest potters in the United States," issued a book entitled "Pottery," some two years ago and it is one of the best written on the subject of sanitary ware. It was published for free distribution and possibly if you write to them, mentioning this journal, you can secure a copy.

Coloring for Artificial Caen Stone.

244. *New York—While I understand that matters pertaining to arts and crafts other than the production of burned clay products do not come within the province of "Brick & Clay Record" I plead indulgence, being a subscriber. In many citites, I find the popularity of Caen stone is growing, a fashionable hotel in New York city having its entire lobby or office finished in this material, and a club in Cleveland, Ohio, having, I understand, an entire office floor finished this way. The material is applied like plaster, but has a light yellowish-cream color. It is grained like the original stone, and is very soft and beautiful. I have tried to secure the proper mixture, by using white cement, plaster-of-paris and yellow ochre, but the coloring matter floats to the surface and streaks the plaster. Do you know what is used?*

The most successful imitation Caen stone is colored with so-called alumina dust, a by-product of silica sand manufacture. In crushing sand rock to make silica sand, a yellowish clay is found that binds the berry (i. e. the sand) of the rock together. This is abstracted by power fans and is a fine, impalpable dust. It has practically the same specific gravity as gypsum or plaster-of-paris and, being somewhat of a natural cement, serves to make the "stone" stronger, and at the same time, gives it a color that is a very close imitation of the genuine.

Cuban Seeks Information.

225. *Cuba—I am starting into the manufacture of brick, tile and other clay products and wish to make a thorough study of the matter. Will you kindly advise me as to such books or trade journals dealing with this industry?*

We refer this correspondent to Searles' "Modern Clay Working," Seger's Collected Works, "How to Analyze Clay" and other books listed in our Book Department elsewhere. Every well-known book published for the clayworker is listed there. As to the trade journal, we, of course, have sent him a sample copy of the best published.

Packing Face Brick for Car Shipment.

242. *Pennsylvania—Is there any material that will take the place of straw as a packing between rows of face brick in rail road cars? Every year brings an advance in the price of straw, it being claimed that the paper mills are using greater quantities all the time. We dare not skimp on the quantity, lest the brick arrive in bad condition, yet this is another one of the cost items that is increasing all the time, without any corresponding increase in the selling price of face brick.*

Salt hay or marsh grass has been used successfully by plants located near great bodies of salt water. It is tough enough to withstand the rubbing motion that the jarring of the freight train gives the brick, while other materials that have been tried, failed. Excelsior has the fault that it is speedily reduced to short pieces that fall between the brick, and shavings have a like tendency. This is a question that "Brick & Clay Record" would like to have answered by its readers. What do *you* use to pack your face brick?

Is Interested in Silo Article.

223. *Washington—We are very much interested in the article on clay silos in your Oct. 21 issue, as we are not only brickmakers, but also farmers and have two brick silos on our farm. We intend to advocate their use. Could you send us an extra copy of the magazine? We also want a copy of the Bungalow Book and enclose check to cover cost of both.*

Our friends out in Washington are not the only readers who have profited by the article on silos. We have received a number of letters from clayworkers in rural communities who say they are going to turn their attention to this field.

How to Keep Coal Out of Fire Clay.

241. *Ohio.—We have a small vein of coal lying above our clay and have great difficulty in getting the miners to keep the coal out of the cars in which they send the clay to the tipple. As the lumps of coal are comparatively small, and generally buried in the car, they are not discovered until the clay is put into the dry-pan. If it is not eliminated at this point, it is ground up and goes into the brick, where it later burns out and pits the product. It seems impossible to fasten the blame on any one miner.*

If the coal vein is large enough to be an inducement, try the plan of offering it free of charge, to the men that work in the mine. Arrange matters so that it will be kept separate in the workings, the men understanding that they are saving something that is of value to themselves, and they may be depended upon not to mix any clay with the coal that is to go into their own stoves. When a single carload has been accumulated in any one of the workings, the miner can load it out, marking the car in some way that will enable the man at the tipple to readily identify it and to side-track it to a private coal dump, which will belong to the men. Give them to understand that they are at liberty to send carts to this dump and to take away all the coal they need for their own household use, free of charge. In their effort to accumulate enough free coal to supply their own wants, they will keep it out of the clay cars, even though, by doing so, they may be using up some time that they think should be paid for.

Wants a Paste Mortar Color.

239. *Texas—I want to get the name and address of some factory making a paste mortar color in different shades. I carry dry colors for that purpose but I had some inquiry for a paste color from some of the brick masons, who say they have used it in northern cities and like it very much, but none could give me the name of the firm that makes it.*

The manufacturers of "Pecora" mortar color, the Pecora Paint Company, of Philadelphia, Pa., manufacture a good paste mortar stain.

As to Blue or Black Brick.

232. *Oklahoma—How are blue brick made? We have had several calls for these brick and I would like to be in a position to fill these orders.*

"Blue" or "black" brick—so-called, are made from clay very rich in iron oxide. When underfired they are reddish in color, the blue being developed at a very high temperature. Where no clay is found suitable—that is, containing little or no iron oxide, artificial means are employed to produce the color, but brick so made are never so satisfactory as those from clay that is adapted to the manufacture. Blue brick are used where great strength is required and are highly thought of for engineering purposes. Their manufacture differs little from that of any other brick, except in the high temperature in burning. A careful analysis of your clay to determine whether it has sufficient iron oxide is necessary. If it does not exist better give up the idea. However, if you still desire to make "blue" brick take your chemist's advice or write us for further information, not forgetting to give us the result of your clay analysis.

Size of Kiln Chambers.

238. *Texas.—We are considering installing a continuous kiln. What do you consider the most satisfactory size for the chambers? If this is determined, we understand, we can decide the total size of the kiln.*

If you are considering erecting a kiln yourself you are making a mistake, as your query justifies the belief that you know nothing whatever of the requirements. Why not take up the matter with a professional kiln builder? A number of these are advertising in this journal and any one of these is capable of determining just what you require.

Improving Color of Face Brick.

237. *Ohio.—Our brick burn a good red color, but lighter than desired. We want, if possible, a purple color. Can you suggest a means? What chemical can I use?*

Chemicals seldom are used to get the kind of brick you desire. The use of a smoky fire towards the end of the burning and finishing the kiln at a temperature sufficiently high to start vitrification on the surface of the brick, usually is the course. It may be that the light color you complain of is due, partly at least, to the presence of chalk in your clay. You can observe this by ascertaining whether the clay fizzes when a little hydrochloric acid is poured over it. If you are using a mixture of several clays and can find one which does not fizz with acid, the chances are that that one will give you darker brick than the others if you can use it separately, or in a larger proportion than at present. Some clay workers produce a dark red brick by the addition of very finely ground cinders or coke to the clay. This material must be added in the form of a very fine powder, as otherwise it will seriously spoil the texture of the face of the brick.

Magnesian Limestone.

226. *Tennessee—What would be the effect of replacing whiting by magnesian limestone in rough stoneware?*

Magnesia increases the contraction, but often produces a harder mass with a somewhat more vitrified texture. Much depends, however, on the material used. Magnesian limestones are, as is well known, very impure. In some countries —Italy especially, magnesian (dolomete) is used largely in the production of stoneware of a hard, but somewhat brittle variety. The precise action of a substance on a stoneware body must, however, depend on the other constituents and on the extent to which the substitution takes place.

More Cures for Efflorescence.

Answering the question asked by "177—Pennsylvania" in the Oct. 21 issue of this journal, Otto Pommer, of Montmorency-East, Quebec, Canada, writes:

"I would like to give two cases from my practice; 1. I was manufacturing shale face-brick and Devonshires, and got one burn with badly scummed brick. The setting had been done flat on flat and there were brick right on top of each other that were entirely scummed, alternate brick showing no scum whatever. The brick were burnt in round, down-draft kilns, with 10 Grateless Furnaces. The brick were perfectly dry, when set. Looking into the matter very carefully, I found that I had three tunnels in my dryer (a Justice Radiated Heat Dryer) which, on account of construction work at the discharge end, were not pulled for two weeks, the brick standing for all that time under a slight heat. To verify this opinion, I did not pull one tunnel for two weeks, and made different scum tests on the green brick (partly covering with paper, tar, etc.) without finding any color difference when dried. After the burning, however, I found that all of the brick that were taken from this tunnel were scummed, the bricks that had been covered with paper and tar being free from scum where the covering had been. This test showed me that some materials will scum when they are allowed to stand too long in the dryer.

"In another place—this is incident No. 2—I always had more or less scum, and think that I tried every remedy known. These brick were also made of shale and burned in down-draft kilns. Changing oil and changing coal did not seem to help, and at last I turned to a theory of Cramer's—the German ceramist—to the effect that burning with a reducing, smoking fire will take off most of the scum. It also is, in effect, that the smoking fire-gases take the oxygen from the Ceruleo salts, changinging those in sulphite (which are easily decomposed) and giving away the sulphurous acid gases which escape through the stack. I found that this worked very well; as soon as I changed the oxygen fire, which I always used before a reducing fire at the end of the finishing heat, I never had any trouble with scum. It changed the color of the brick from red to brown, but this did not hurt the sale any. Whether Cramer is right in his theory or if I simply covered the brick with the smoke, I do not know, but I do know that I had no more trouble with scum."

Will the correspondent whose letter we published as "No. 228—Missouri" in the Nov. 18 issue, communicate with the editor? His original letter has been misfiled.

Prize Problems for the Clayworker

In each issue of "Brick and Clay Record" a problem will be propounded to the readers—usually an actual experience of some clay worker, who, confronted with certain conditions, sought a solution and succeeded, or, having failed, still waits a Moses to lead him out of the wilderness. A special prize of a paid-in-advance subscription to "Brick and Clay Record" for three years will be given for the best answer.

PROBLEM NO. 1:

What would you do if you had a 50-foot shale bank and was having trouble with your ware because the top shale, which was 20-foot thick, burned best at 1700 to 1800 degrees while the other 30 feet burned best at 2,000 degrees? How would you mine this and how would you solve the mixing problem, thus stopping the waste in your burns and at the same time economizing on labor?

Send in your answer to Problem No. 1 so it will reach this office before Dec. 10. Address your letter to "Prize Problem Contest Editor, Brick and Clay Record," Chicago.

PROBLEM NO. 2:

What would you do if you had a clay pit 1,000 feet from the plant and it was necessary to haul the raw clay up an incline to the storage bin? Would it be more economical to continue to use a mule to pull the cars to the incline and then hoist them to the storage bin by a driven hoist or is there some other system more efficient and economical? The capacity of the plant is 40,000 brick per day.

Send in your answer to Problem No. 2 so it will reach this office before Dec. 18. Address your letter to "Prize Problem Contest Editor, Brick and Clay Record," Chicago.

PROBLEM NO. 3:

What would you do if you had spent all your life in the manufacture of clay products, and now at the age of 56 years, having a 20,000-a-day plant of uncertain value as your sole asset and being forced to admit that you have made a failure at the game, and your only son, 20 years old, suddenly evinced a desire to follow in your footsteps and learn the business? With your own failure before you, would you encourage him in this desire or urge him to take up some other vocation?

Send in your answer to Problem No. 3 so it will reach this office before Dec. 28. Address your letter to "Prize Problem Contest Editor, Brick and Clay Record," Chicago.

Problem No. 4 will appear in the Dec. 16 issue and new problems will be published in subsequent issues. Answers to problem No. 1 will be printed Dec. 16; to Problem No. 2, Jan. 6; to Problem No. 3, Jan. 20.

The Superintendent

A Department Conducted for the Interchange of Ideas in Methods of Manufacture

Contributions from our readers are solicited for this department on any subject pertaining to the manufacturing end of the industry. Short cuts and labor-saving suggestions are particularly sought. Address all communications to the Editor of the Superintendent Department. Brick and Clay Record, Chicago.

Changing Dies.

IN MANY holloware plants there is no adequate arrangement for handling the heavy dies used in molding the ware. To change dies under these conditions, means that a group of about three men will gather around the front end of the auger machine and after about thirty minutes of treading on each others' feet, much straining of muscles and heavy lifting with the aid of pinch bars and cuss words, enough bolts will be placed to support the die and relieve the strain on the men.

Sometimes a bolt "won't go in."

Then comes the temptation to some luckless forefinger to test the alignment of the bolt holes. ("Watch your bar Willie, it's slipping.")

The easiest way around all this trouble is to handle the dies with a small chain hoist and save much time.

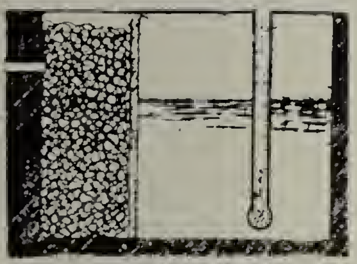
Eye bolts or lifting rings can be attached to the dies in such a position that when suspended the die will hang straight and all bolt holes line up.

With this arrangement one man can change dies unaided.

It is a small matter, but will amount to something at the end of a year if many changes have to be made.—

Pumping Water From a Creek.

A subscriber experienced considerable trouble in the use of water from a small stream near his plant because of the materials carried down by the water getting into the valve of the pump. He overcame this by constructing a tank in the ground at the side of the stream so that the water can flow into it. Near the centre of this tank a partition of wooden lattice work with a small mesh was fixed, and the portion of the tank into which the water enters was filled with small brushwood so as to form a kind of rough filter. The end of the pump-pipe was placed in the other part of the tank, and the whole covered with a light wooden cover. If preferred, pebbles may be used instead of the brushwood and will be more durable, but a stronger partition will then be necessary. An overflow should be provided in the filter part of the tank so that there is no chance of floating matter being carried into the empty portion during times of flood.



Piling and Unpiling Face Brick.

In laying out the spaces for your hacks, leave room between the end of the hack and the posts that support the sheds to allow a man to stand, take brick off the hack and put them in the barrow. Hack the brick in rows toward the posts, putting subsequent burns of the same general shade in front of, or behind (as the case may be) the first row. Unhack the brick from the ends of the pile, which will insure your shipping the same percentage of each burn in each shipment. This will make the variation uniform.

THIS IDEA WINS $5 PRIZE

The prize-winner in this issue's contest is W. A. Butler, 4321 West St., Oakland, Cal. Mr. Butler offers a most excellent suggestion for the burner. H. S. McClain of Wellston, Ohio, and A. P. Steele of Statesville, N. C., each offered valuable suggestions and because of this fact special credit is given here. Mr. Butler's suggestion follows:

Compressed Air for Oil Burning.

It has often occurred to the writer that the heating of compressed air after compression would be a great help in reducing the amount of oil required where air was used in place of steam as an atomizing agent. Therefore I was agreeably surprised when I read a "Wrinkle" in the October issue of "Journal of Electricity Power and Gas" entitled: "Hot air as a conveyor for fuel oil under furnaces where steam is not made." It reads:

"The excessive expense of the use of compressed air, at atmospheric temperature, for injecting oil for fuel purposes is well known. It was thought possible to obviate this by heating the air after compression. This was done by heating a coil (approximately 100 feet) of one inch pipe, cut into six feet lengths, in a part of the furnace that would keep the temperature of the air at approximately 450 degrees Fahrenheit. The results were very gratifying."

(Signed) "J. F. Creighton."

It occurred to the writer that the pipes might be run through the drier, then through the waste heat duct, and that the pipes be branched out or enlarged to allow for expansion of the compressed air, and covered with steam pipe covering when exposed to the atmosphere. Steam may be superheated in the same manner. This idea may be also of use in the burning of low grade gas in up and down draft kilns.

Sheet Iron Runways.

Strips of sheet-iron, a quarter inch by six inches wide, and from eight to twelve feet long, make perfect runways for the loaded barrows, wheeling from kiln to stock and from shed to car. They are light enough to be shifted without loss of time or effort, and make the wheeling much easier and faster. They last for years.

Speed Increases Belt Tension.

The maximum allowable tension in a belt apparently increases with the speed, as the effective pull is not reduced so much by centrifugal force as is commonly supposed.

Repairing Leaky Sheds.

Do not wait until snow and ice gathers on the sheds to discover where the leaks are and do not be like the Irishman who said there was no need of mending his roof when the weather was dry. A dripping roof will wet the brick and a subsequent cold snap cause them to stick together, which, while it may not harm the brick, will make them that much harder to handle and so run up the labor cost. Watch the roof, particularly around the skylights, during every rain, and mark the small leaks. Repair them before they cost more than the mere repair charge.

Preheating Stops Lamination.

Prof. A. V. Bleininger is responsible for the idea of preheating to stop lamination in certain clays and many stiff mud plants have him to thank for solving their problems. Preheating, as a rule, makes the clay more porous and permits the moisture to escape more readily. The process requires the installation of a rotary clay dryer. One plant that uses this treatment runs the bank clay through the dryer at a temperature of 600° Far. The clay comes out, in this case, a dark red. It is permitted to cool off over night and is then run through the dry pan. It is screened and goes to the pug mill and thence to the augur machine. This material shows no lamination and drys perfectly in 24 hours, although without this treatment it is almost impossible to dry it satisfactorily and the lamination is very bad.

Prepares Clay in Novel Way.

Clays are just about as stubborn as mules—some a little more so—but, like the long-eared quadruped, when finally understood, they are handled with ease. A Canadian brickmaker—P. Anderson of Edmonton, Alberta—conquered an unruly clay at his plant by rather a novel method. He uses the dry press process and finds it impossible to make good brick is the usual way. He solved the problem by taking clay direct from the bank and, after crushing it, running it through the pug mill, the brick machine and the cutter. The brick are stacked on hacks in the yard to dry. When thoroughly dry they are returned to the pulverizer, crushed, screened and then pressed in a four-mould press. From here they go directly into a down-draft kiln for burning. A dry press face brick of unusually fine quality is the result.

Produces Scum on Drying Ware.

Waste flue gases should be utilized for dryer purposes, but never the pure hot air. Such gases, of course, must never be permitted to come in contact with the drying goods; otherwise a coating of scum would be formed on the goods.

Uses Stoves in Kilns.

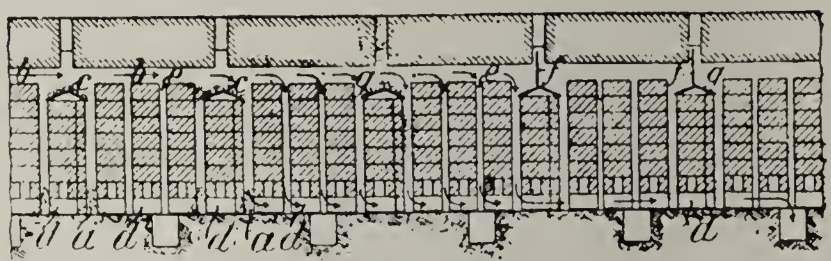
The amount of dry hot air available from the cooling chambers of an ordinary continuous kiln is not always sufficient to raise the temperature of the drying off chambers to the required 130 degrees C. necessary for the prevention of efflorescence. This is particularly noticeable if the goods are set in a damp state or without any preliminary drying. It is customary in Europe—the home of the continuous kiln—quite often, to augment the supply of hot air by using portable stoves.

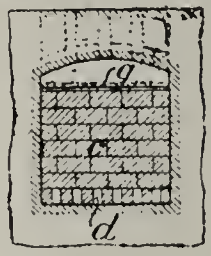
A Terra Cotta Brick Made to be Water-Proofed.

When building cold storage ware-houses and some parts of breweries, chemical laboratories and many other buildings where a low temperature must be maintained or where absolute freedom from dampness is necessary, the walls have to be insulated and, with ordinary brick, stone and even concrete there has to be some sort of lining, such as cork, hair, felt, flax-fibre, charcoal or sawdust. It has been found upon investigation that these materials become foul and rot in a little while. It seems that a terra cotta company in the West, after having experimented with insulation, has solved this problem and put on the market an insulating lining brick that is next to being almost perfect for the purpose. This brick, to all intents and purposes, is water-proofed and is so burned that about 45 per cent of the volume is confined air and its specific gravity is 0.90. Its ultimate strength in compression is 750 pounds per square inch, it floats, it absorbs no moisture, it is everlasting, can be used and put into the wall in the one operation of building, and it can carry a considerable load. It is a notable addition to the building trade for work of this kind. These few lines clearly show to anyone interested in the manufacturing of terra cotta ware one of the many things that can be made from clay.

A Simple Continuous Kiln.

The accompanying illustration of a kiln patented by a German lady (Mme. Anna Marie Anschutz, D. R. P., 261, 538) may be of use to some of our readers who are unable to erect a continuous kiln of the most generally accepted pattern, or who are looking for something rather different to what they have seen hitherto. As will be seen, the flues are all in the ground, and the brick are set in blades or benches with a space between each. On the top of each bench, which happens to fall beneath a feed hole, is placed a small gable of fireclay *c*, so that the coal in falling on it burns, and the ashes fall to the bottom of the kiln, as shown at *a* and *d*. A sliding damper *f* prevents the hot gases from traveling too far, and gives them a downward direction, an indicated by the arrows. Some amount of hot gas travels along the top of the brick through the space *b*, but in actual work this space is much smaller than is shown in the illustration and, consequently, an almost perfect down draught is obtained. The walls of brick are set solid where the coal falls between them, so that quite a large proportion of the brick can be used for facing purposes. As the ashes fall, or are pushed so as to fall to the bottom of the kiln, they block up the lower flue *d*, and so force all the air entering from the cooling chambers to pass over the top of the brick. This arrangement may be modified by building rather taller trace holes in the unburned brick, if desired. The drying and smoking of the brick may be effected by waste gases, which are permitted to pass through the lower trace holes before entering the chimney flue. This kiln is ingeniously designed, and has several points in its favor, but it is so different from those ordinarily used that it is difficult to say whether it will be satisfactory or not. It certainly constitutes an interesting attempt to combine the advantages of a downdraught kiln with those of a Hoffmann kiln, and is well worth consideration, if only for this reason. A further simplification may be effected by making the roof a temporary one, com-





posed of burned brick laid flat and covered with ashes. This would necessitate the construction of the top flue *b* each time the brick were set, but need not offer any great difficulties in cases where a permanent top to the kiln is not so necessary.

Runaway Cars—How to Stop Them.

Danger and damage in runaway or "wild" cars on inclined tracks from the clay pit are serious, particularly when endless chain haulage is used. Fig. 1 is a simple device consisting of a strong beam with a hole bored through it somewhat nearer one end than the other, so that the beam always stands with the end (b) about eight or ten inches above the top of the rails. A strong iron rod passed between the rails and the beam is sufficient to keep it in position. The wagons travel up the incline in the direction shown by the arrow, and their axles press down the beam, which rises again as soon as the wagon is past. It is thus ready to stop any car running down the incline, should one break away from the hauling chain or rope. It is, of course, understood that a number of these beams are arranged on the track, so that if more than one wagon is on the ascent at once each will be stopped by a separate beam. If the incline is very steep, the descending wagons may gain such force that the ample arrangement shown cannot stop them, and the device shown in Fig. 2 is then preferable. This is a modification of the well-known slipper used for cars in many hill districts, and consists of a strip of fairly hard wood, which is hung by a small length of chain and two hooks from the axle of the wagon in such a manner that the wood is not more than an inch behind the wheels. A great distance gives the wagon too much chance to gain an excessive speed. Another short piece of chain, provided with a ring is also attached to the wood, so that the latter may be hung up when the wagon makes its return journey.

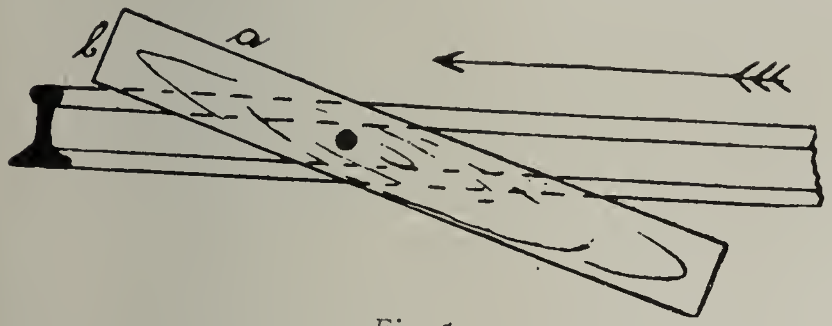


Fig. 1.

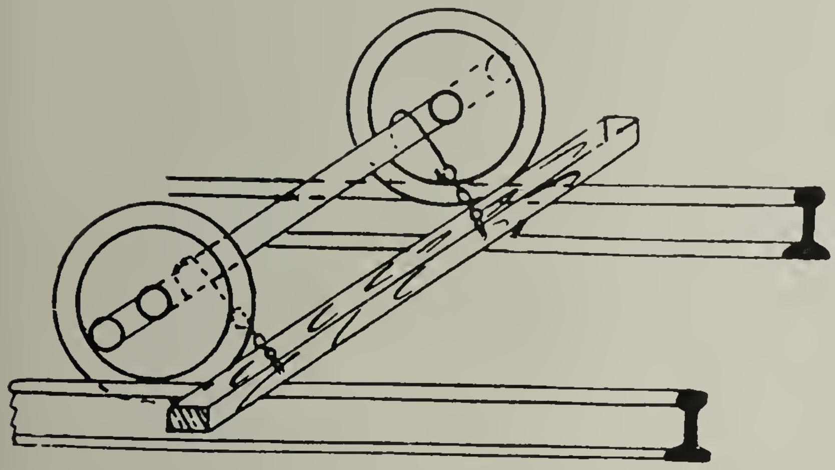


Fig. 2.

Wetting Down and Breaking Up Coal.

In wetting down coal for a steam shovel it is well to use as little water as possible, just enough to keep the dust down. Fine coal or slack should be wet just enough to hold it together until it cakes or cokes; otherwise this fine coal will be pulled straight through the flues by the exhaust without having had an opportunity to burn. Coal should be broken to about the size of a man's fist before being fired. This allows it to be spread more evenly over the fire and permits it to burn faster than when fired in big lumps.

Hack Tiles Better than Hack Boards.

Hack-tiles present distinct advantages over hack-boards in that they are cheaper when homemade. They can be made in the ordinary pipe machine in 12 in. lengths, tubular and 4½ in. by 2½ in. in rectangular. If homemade and a little irregular it is well to spread a thin layer of sand on them before setting the brick on them.

Drying Drain Tile on Hacks.

When drying common drain tile on hacks, nothing is better than a row of burned tile of the same diameter placed in a similar manner on the hack.

Exhaust Steam Waste Product.

Exhaust steam is an unnecessarily waste product and invariably should be made use of. The dryer is the proper place to use it.

Forecasting Night Frosts.

Frosts may be forecast the preceding afternoon by the open-yard brickmaker, and even the mean temperature of the following day. Procure a "wet and dry bulb" thermometer. The wet bulb, when taken in the shade between 2 and 3 p. m., exceeds the lowest air temperature of the succeeding night by 7¼ degrees Fhr. Take the wet bulb, reading at the time specified and deduct 7 degrees. If the resulting figure is less than 32 degrees there will be frost during the night. The reading of the wet bulb thermometer one hour before sunset will give the air temperature at 8 a. m. the next day, which corresponds approximately to the mean for the day.

A Good Underglaze Color of Dark Blue.

A good dark blue underglaze is as follows: Alumina, 60 lbs.; zinc carbonate, 30 lbs.; cobalt oxide, 3 lbs.; red lead, 2 lbs.; borax, 1½ lbs.; flint, ½ lb. Melt together in a pot kiln and grind very hard when cold. Apply and harden up, if necessary, by a short heating in a special kiln before applying the glaze.

As to Roofing Tiles.

Curvature of roofing tiles in a wrong direction usually is remedied by attention to the mouthpiece from which the clay column issues, but the fault sometimes is with the table onto which the tile runs. Again, it may be due to a tension of an internal nature in the clay itself.

Glazing Brick.

Brick for glazing should always be pressed so as to secure complete uniformity of size and shape. They may be glazed either before or after firing, opinions differing as to which is the more economical course.

Knife Cuts Tailings.

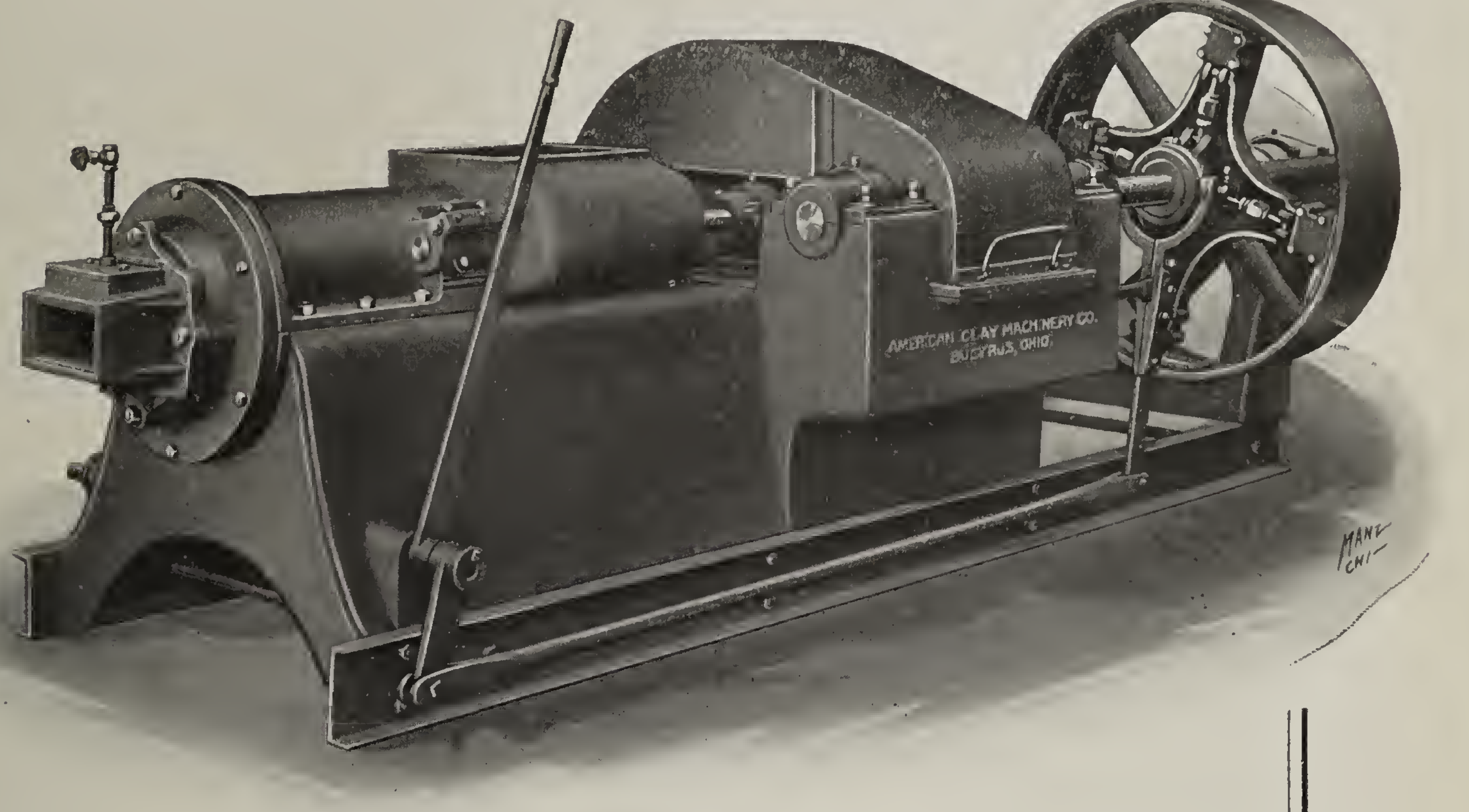
A brick plant in Ohio has a knife set at an angle just under the off-bearing belt. Tailings drop onto this knife and are cut into smaller pieces for the pug mill.

The above views show some of the many extensive plants which cover vast areas of land in and about St. Louis, Mo. No. 1 is the enamel plant of the Hydraulic Press-Brick Co., where its famous enamel brick are made. No. 2, the Laclede plant of the Laclede-Christy Clay Product Co., where immense quantities of fire brick are made. No. 3, the plant of the Mitchell Clay Mfg. Co. No. 4, the Howards factory, one of the plants of the Evens & Howard Fire Brick Co. No. 5, the paving brick plant of the Hydraulic Press-Brick Co. No. 6, the plant of the Highlands Fire Clay Co. No. 7 shows the No. 5 shipping office of the Hydraulic Press-Brick Co. Its exterior is faced with cream colored enamel brick; the interior is finished with white enamel brick, with red tile floor; the roof is also of red tile.

PROFIT PRODUCING POINTS

No. 233 Auger Machine—

One of our new machines built for economical production of building and paving brick, tile, hollow ware and fire proofing. Capacity per hour on average material: Building brick, 3,000 to 5,000; paving block, 2,000 to 3,500; drain tile, 4-in., 2,000 to 3,000; 6-in., 1,500 to 2,000; 8-in., 1,200 to 1,500; 12-in., 600 to 1,000. Fire proofing and hollow ware, 7 to 12 tons. Base is a heavy one piece casting, carrying bearings and oil reservoirs for gears and lower half of clay cylinder. Auger shaft turned forged steel. Bearings ring oiling and babbitted, 8 to 12 inches long. Ten inch self aligning thrust bearing. Gears cast from American gear metal, gears run in oil. Continuous auger with chilled wearing surface. Clay cylinder has sectional liners, removable. Tapered sectional liners around expressing auger. Hopper feed 8 in. diameter with reversible spring steel blades. Friction clutch pulley. Full description on request.


AMERICAN CLAY MACHINERY CO.
BUCYRUS, OHIO.

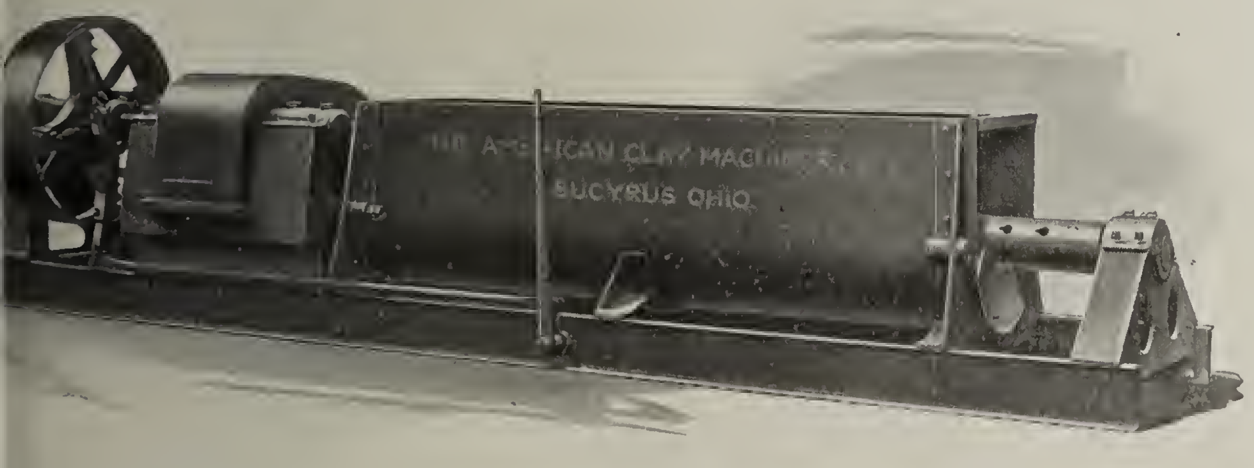
No. 233 AUGER MACHINE

No. 304 Pug Mill—

Here is a single shaft, single geared pug mill of easy running and great capacity. Can be driven in either direction and discharged at either end. Building brick capacity per hour, 4,000 to 8,000; paving block, 2,500 to 5,000. Capacity is governed by speed, pitch of knives and nature of material and tempering required. The base is a heavy one piece casting, carrying bearings and oil reservoirs for gears to run in oil. Cast iron eight inch tempering shaft, knives hammered steel, battle ax type, can be set at any angle. Bearings ring oiling babbitted 12 and 16 inches long. Shell is one piece tank steel 5-16 in. thick, 120 in. long, 28 in. wide, 33 in. deep. Friction clutch pulley.

This is a mill that will make good. Full description for asking.

We build every machine required in a clay plant. For description of either machinery read The American Clay Magazine, Bucyrus, Ohio, free to clay-workers.


THE AMERICAN CLAY MACHINERY CO.
BUCYRUS OHIO

NO. 304 PUG MILL

BUILT RIGHT RUN RIGHT

The American Clay Machinery Co.

Bucyrus, Ohio, U. S. A.

Much the largest manufacturers of Clayworking Machinery in the world. And much the best.

With the Clay Plants

A Department Wherein is Set Forth Factories Erected or Contemplated, Recent Incorporations, Improvements and Enlargements, and Any New Ideas That May Be of Benefit to Others

CLAYWORKERS visiting Missouri's metropolis with an idea of being "shown" how they make brick in St. Louis, will do well to allow themselves a full day, or even more, instead of the "time between trains" that is usually given inspection trips to clayworking centres. St. Louis' clayworking industries cover acre after acre with extensive machinery buildings, driers, kilns and stock sheds. The illustrations on the page opposite show some of the prominent plants —only a few, but they give some idea of the importance of this industry in "Bricktown"—as someone has aptly named St. Louis, Mo.

The enamel plant of the Hydraulic-Press Brick Company, located at Kingshighway & Frisco R. R. tracks, is ideal from the standpoint of maximum output with the minimum cost of handling. The kiln battery comprises 12 round down draft kilns. The machinery and other equipment for preparation of enameling material is electrically operated. The past year the plant was run full force, both night and day to supply the demand for enamel brick. This plant was destroyed by fire in the spring of 1912, and was rebuilt at once with buildings of substantial brick construction. The enamel brick made by this company are meeting with ready favor among the architects and builders. This plant is under the personal supervision of Sidney H. Ivery.

The Laclede-Christy Clay Products was formed in July, 1907, by the merging of the Christy Fire Clay Company, established in 1857, and the Laclede Fire Brick Mfg. Company, established in 1844. The Laclede works are located in the southwestern part of St. Louis, on the Frisco Railroad, the buildings being of modern construction. The products of the Laclede-Christy Co. include practically everything in the line of refractories, also products, such as sewer pipe, wall coping, flue linings, drain tile, fire brick and the "Laclede-Christy" chain grate stokers, which are the result of years of thought and labor in the development of a self-feeding, self-cleaning stoker. The Laclede-Christy are licensees of the Denison tile. The Laclede Works are in charge of Frederick Talbot, general superintendent. The officers are: President, J. L. Green; vice-president and general manager, R. D. Hatton; secretary, W. J. Westphalen, and manager of sales, H. K. Lackland.

The plant of the Mitchell Clay Mfg. Company, located on Manchester avenue, is one of the oldest established in St. Louis, and is always busy turning out first-class fire brick and drain tile. This plant is well equipped with machinery and is operated along modern lines.

That the Howards plant of the Evens & Howards Fire Brick Company of St. Louis is one of the most up-to-date as well as one of the best plants in Missouri, is the opinion of the pipe and brick men who have visited this factory. All the buildings and the machinery are of the most modern construction. This plant is well located at 5200 Manchester avenue, on the Missouri Pacific & Frisco Railroad, not only with relation to its supply of raw material, but to its splendid shipping facilities.

The capacity of the Howards plant is over 300 tons per day. The products consist of sewer pipe, drain tile, fire brick and tile. The officers are: C. D. Gregg, president; G. W. Jones, secretary and treasurer, and W. J. Volz, general superintendent.

The Hydraulic-Press Brick Company has been for some years past one of the leading producers of street paving brick and blocks in Missouri. Its modernly equipped No. 11 plant, located on the Missouri Pacific and Frisco Railroads produces 125,000 brick and block daily. The shale is obtained from their clay field at Malcolm, Mo., where it is dug with a 70-ton steam shovel and conveyed to No. 11 plant in the company's own 100,000 capacity cars. This plant has 16 down draft kilns. All the buildings are of brick, with the exceptions of the sheds. The Hydraulic-Press Brick Company has 30 plants and selling agencies throughout the principal cities of the United States, with an annual output of over 500,000,000. The officers are: Geo. A. Bass, president; Ralph Simpkins, vice-president and secretary; George F. Baker, treasurer and auditor; and F. W. Miles, general manager.

The Highlands Fire Clay Company, located at Macklin and Wise avenues, has one of the most up-to-date and best equipped clay mines in St. Louis, having a daily capacity of about 200 tons of high grade fire clay. The Highlands Company does not manufacture any clay products whatever, but their fire clay is shipped to all points of the United States to be used in the manufacture of fire clay products.

NEWS IN BRIEF.

Gladding, McBean & Co. have the terra-cotta contract for an addition to the Mills building.

The Cape Henry Silicate Brick Works has been incorporated at Wilmington, Del., with a capitalization of $200,000.

W. E. Shipley, Nueva Gerona, Isle of Pines, Cuba, writes that he is starting in to manufacture brick, tile and other clay products.

Fire of unknown origin destroyed the plant of the Maxwell (Iowa) Brick & Tile Works, Nov. 6th. The loss is $8,000, with $3,000 insurance.

After making a number of improvements, operations have been resumed at the Kentucky Fire Brick Company's plant at Portsmouth, Ohio.

J. H. McGowan, of the South Webster (Ohio) Brick Company, is said to be interested in the erection of a plant at Portsmouth, Ohio. Character of product is not announced.

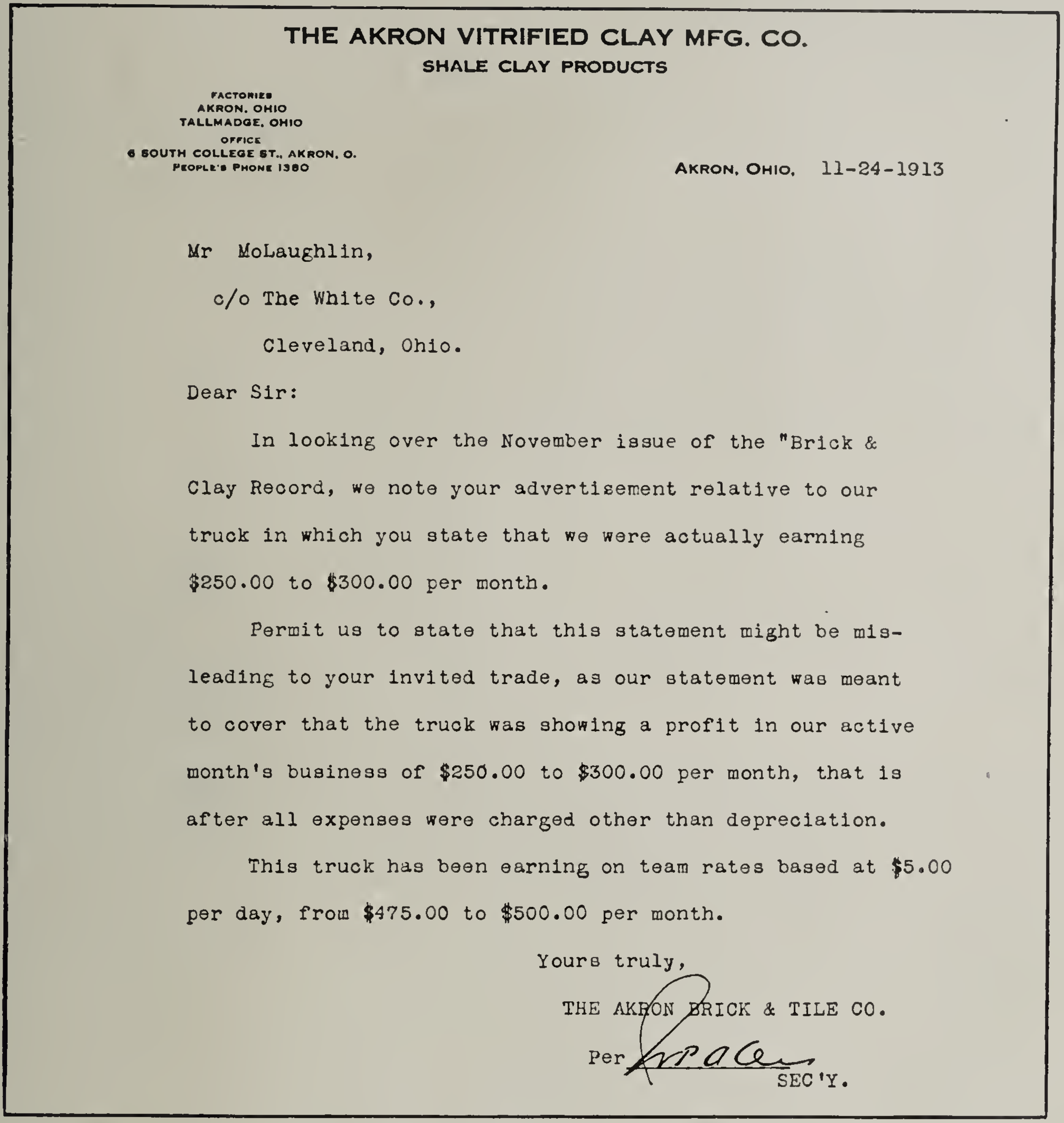
W. L. Sibley of Birmingham, Ala., is having plans made for a new brick plant, to be established at Tuscaloosa, Ala. It is said that $40,000 will be expended on buildings, kilns and machinery.

The Boston-Berkshire Composite Brick Company, of Cheshire, Mass., has been incorporated with a capital of $350,000. Richard A. Burgett, John H. C. Church and Charles B. Church are the parties interested.

The Business Men's Association, of Fredericksburg, Va., is considering a proposition recently made to it, covering the establishment of a brick plant in that city. It is proposed to erect a plant with 25,000 daily capacity.

William K. Williams of Columbus, Ohio, has filed a petition in United States court asking that the Junction City Clay Product Company of Junction City, Perry County, be declared

White Trucks Will Save Just as Much Money For You—Read the Letter



THE AKRON VITRIFIED CLAY MFG. CO.
SHALE CLAY PRODUCTS

FACTORIES
AKRON, OHIO
TALLMADGE, OHIO
OFFICE
6 SOUTH COLLEGE ST., AKRON, O.
PEOPLE'S PHONE 1380

AKRON, OHIO, 11-24-1913

Mr McLaughlin,
c/o The White Co.,
Cleveland, Ohio.

Dear Sir:

In looking over the November issue of the "Brick & Clay Record, we note your advertisement relative to our truck in which you state that we were actually earning $250.00 to $300.00 per month.

Permit us to state that this statement might be misleading to your invited trade, as our statement was meant to cover that the truck was showing a profit in our active month's business of $250.00 to $300.00 per month, that is after all expenses were charged other than depreciation.

This truck has been earning on team rates based at $5.00 per day, from $475.00 to $500.00 per month.

Yours truly,
THE AKRON BRICK & TILE CO.
Per
SEC'Y.

The following paragraph from our ad in Brick and Clay Record, November 18, 1913, brought the letter reproduced above.

"A White 5-ton Power Dumping Truck owned by the Akron Brick and Tile Company is actually earning $250 to $300 per month, figuring the work it performs at the regular cost of doing it with teams."

**If White Trucks will save money for you—you want to know it.
A post card will bring catalogs and other information.**

THE WHITE COMPANY
CLEVELAND, OHIO

The Federal Clay Product Co.
Mineral City, Ohio
Fire Brick for Kiln Work Made a Specialty

ROBERT W. HUNT JNO. J. CONE JAS. C. HALLSTED D. W. McNAUGHER
ROBERT W. HUNT & CO., ENGINEERS
INSPECTION AND TESTS OF BRICK AND ALL CLAY PRODUCTS
CHICAGO 2200 Insurance Exchange Bldg.
NEW YORK 90 West Street
PITTSBURGH Monongahela Bank Bldg.
ST. LOUIS Syndicate Trust Bldg.
LONDON Norfolk House
MONTREAL 905 McGill Bldg.
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SAN FRANCISCO 418 Montgomery St.
SEATTLE 309 White Bldg.
MEXICO CITY Cinco de Mayo 6B

Anchor Brand Colors
For Mortar Cement and Brick
Brown, Black, Red and Buff Strongest and most durable
Manufactured by
C. K. WILLIAMS & CO., EASTON, PA., U. S. A.
Correspondence solicited

"STAG" BRAND
Manganese Steel Castings
EDGAR ALLEN AMERICAN MANGANESE STEEL CO.
Chicago, Ill., New Castle, Del.

PULSOMETERS
Cost less to purchase, install and operate than any other type of brickyard pump. They handle gritty water and never need lubrication.
Write today for our "Pulsometer Handbook." It shows many novel installations and contains valuable data on pumping problems.
PULSOMETER STEAM PUMP CO.. 13 Battery Place, New York, N. Y.
Chicago Office: 223-231 North Jefferson Street

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Manufacturers of Perforated Metals and Crucible Steel Castings of All Kinds
MILWAUKEE - - WISCONSIN

"They Never Fade"
Colors
Red, Brown, Buff, Purple, Black for
Cement, Mortar, Brick, Stone, Concrete, etc.
25 Years' Exposure Proves Their Permanence
Ricketson Mineral Paint Works, Milwaukee, Wis.

WANT A SITUATION?
There is the right place for the right sort of a man somewhere. The problem is to get the two together. Our Classified Ad pages bring them in touch with each other.

bankrupt. The company recently went into the hands of a receiver.

A brick plant is contemplated at Coeur d'Alene, Idaho. John Howard is secretary of the company.

The Indiana Paving Brick & Block Company of Indianapolis, Ind., has increased its directorate by the addition of two new members.

The Puritan Brick Company, of Hamden, Ohio, will change over to paving block. This plant has heretofore made face-brick exclusively.

P. M. Modisett and W. D. Dent, officials of the St. Louis & Hannibal Railroad, are interested in a new fire-clay development at Whiteside, Mo.

The Keystone Junction (Ohio) plant of the Savage Fire Brick Company was destroyed by fire Saturday, Nov. 8th. Reconstruction will be started at once.

The Finzer Brothers Clay Company, of Shanesville, Ohio, has filed papers with the secretary of state, increasing its capitalization from $15,000 to $50,000.

The Excelsior Fire Clay Company, of Lisbon, Ohio, reports business as being brisk. This company makes the "Excelsior" chimney tops and other fire clay products.

The Higginsville Brick & Tile Company has been incorporated at Higginsville, Lafayette County, Mo. The incorporators are V. P. Goodale, F. P. and B. T. Canterberry.

C. C. Cocke, of Crofton, Va., writes that he is starting a plant at Charlottesville, Va., and wishes to get in touch with manufacturers of brickmaking machinery, kilns, etc.

J. M. Leach, H. Leach and Mark Brown are the incorporators of the J. M. Leach Manufacturing Company of Kokomo, Ind., a $200,000 concern that will manufacture ice and brick.

The Clarendon Paper Clay Company, of Clarendon, Vt., is about ready to start mining kaolin, having completed extensive alterations to the property recently acquired on Cold River.

With a plant that represents the expenditure of $150,000, the Valley City (N. D.) Brick & Tile Company is making a strong bid for a goodly portion of the trade in that section of the country.

J. W. Coffy, superintendent of the Guernsey Clay Company at Byesville, Ohio, will start at once the construction of two additional kilns which, when completed, will give employment to 20 more men.

Thornton Brothers, of Rudyard, Mich., have had a successful year, having made 2,500,000 building brick during the season just closing. Another kiln has been added, which will increase the capacity to 3,500,000.

The Shale-Clay Brick Company, of Asheville, N. C., has organized with a capital of $50,000, to establish a brick and tile plant at Hot Springs, N. C. Machinery will be installed that will cost approximately $10,000.

The Batavia Iowa Brick & Tile Works is to be rebuilt, W. W. Lewis, superintendent. New drying houses will be built, new machinery installed, including best modern appliances to fill order for silo blocks.

Detectives are working on the case of the stolen pay roll of the Iron Clay Brick Company, which was sent from Columbus, Ohio, to the factory at Shawnee. When the box, supposed to contain the money was opened, it was found that it contained two sample bricks.

Frederick H. MacDonald of Grand Rapids, Mich., has received the contract for the terra cotta for the new Pantlind Hotel. It will be manufactured by the Federal Terra Cotta Company of Woodbury, N. J., and be light cream color. The amount of the contract is said to be $25,000.

W. W. Dickinson, president of the Arkansas Brick & Manufacturing Company of the Big Rock Stone & Construction Company, both of Little Rock, Ark., states that the two companies are shipping approximately 15,000 carloads of finished product a year, the valuation being close to $500,000.

The Cayuga (Ind.) Brick & Silo Company is being promoted to take over the old Cayuga Brick Company plant, which has been inoperative for some time. The moving spirits are A. T. Livengood, Covington; F. W. Wood, Indianapolis; A. H. Zimmerman, Bloomingdale, and E. E. McKee, Covington.

McCreery Brothers, of Abilene, Texas, are in the market for one 150-h.p high pressure boiler, with 3-in. flues; a clay mixer; a piano-wire screen; three wheeler scrapers; an elevator, with cups 100 ft. long and 12 inches wide; 100 ft. of 12 in. belt—6 and 8 ply—and 50 ft. of 7-in. belt, 6 ply; all to be delivered f.o.b. cars Lanius, Tex., 6 miles north of Abilene.

The officers of the Federal Clay Products Company of Mineral City, Ohio, have started a campaign to sell stock in order to retain the industry at that place. The plant was recently destroyed by fire and if proper financial arrangements can be made it is proposed to rebuild it as soon as possible. George J. Markley is at the head of the concern.

In the hope of saving the city thousands of dollars that are expended annually in taking care of "down and outs" and chronic "dead beats," Mayor Van Swearingen, of Jacksonville, Fla., has recommended the establishment of a municipal brick yard, where the worthy, but temporarily embarrassed gentlemen of leisure may find employment during the Winter months, and those who do not want to work, made to earn their board and keep. It is thought that a plant of this character could be made self sustaining and that the output could be used in municipal improvements of various kinds.

Announcing a new policy—that of selling the greater part of the output through dealers—the National Clay Works of Mason City, Iowa, states that this method of disposing of its capacity has proven so satisfactory that it will be continued indefinitely. While it will continue to take care of such local business as may come to it voluntarily, no effort will be made to sell direct to the consumer. The National Clay Works was organized in

May, 1913, and took over all of the property of the Farmers' Cooperative Brick & Tile Company. The stockholders are practically the same as those of the old company and but few changes have been made in the board of directors and officers.

In a case decided at the Fall Sessions at Bracebridge, Ont., on the 11th inst., Mr. George Tennant, brickmaker of that town, was awarded $66 and costs for a quantity of brick delivered to the Rickley Co. of Gravenhurst. Defendants claimed that the brick were broken and not of the value charged, but still they used them, and were therefore ordered to pay for them.

C. H. Carter, of St. Louis, who owns a farm near Brooklyn, Ind., has made an offer to the Martinsville Factory Club to donate ten acres of fine shale land on his farm to any one who will start a plant for the manufacture of brick or tile. To the land donation he will add $1,000 in cash. Mr. Carter's address is 2618 Hodeamonte avenue, St. Louis, or he can be reached through his Martinsville agent, John H. Hardwick.

George W. Heckert, of Port Royal, Pa., has taken out a patent on a machine that makes brick from ganister rock. Mr. Heckert has been working on the invention for the past five years and proposes to give it a test in the very near future, at one of the large brick plants in Mount Union Pa. The machine has a capacity of eight bricks in one mould and, if it proves a success, will revolutionize the process of making brick from ganister rock.

As a test of a new brick making system, P. O. Duclos is now burning a kiln of 150,000 brick at the yards west of Little Falls, Minn. Mr. Duclos has been working under difficulties this season. Before his new plant was entirely completed a cold snap came on in October and ruined 200,000 brick which were in the dry rooms and 75,000 were frozen in the yards. The entire plant, however, is now in first class working order and he expects to turn out at least 8,000,000 brick next season.

Claiming that clay plant property worth upwards of $100,000 had been sold for $412, Henry W. Brackett, one of the stockholders in the Revere Fire Brick & Tile Company, of New Brunswick, N. J., obtained an order from Vice-Chancellor Lewis requiring the other stockholders to tell what they know about the sale, which, Mr. Brackett claims, was fraudulent. The property covers 262 acres with a water frontage of 4,100 ft. on the Raritan River. A complete brick manufacturing plant is on the premises, the property having been acquired in 1907 by the Stegmeyer Brick Company from the American Realty Corporation.

FACE BRICK

Johnsonburg "Artbrique" will be used to face the new Pantlind Hotel at Grand Rapids, Mich. The contract is said to call for 350,000 brick, in kiln run shades.

The plant of the Lincoln Brick Company at Bolivar, Pa., which has been inactive for several months, has resumed operations. The enameling department has ceased experimentations, but the plant will continue to make brick as before. Orders are declared to be good, and a continued run is therefore anticipated by the officials.

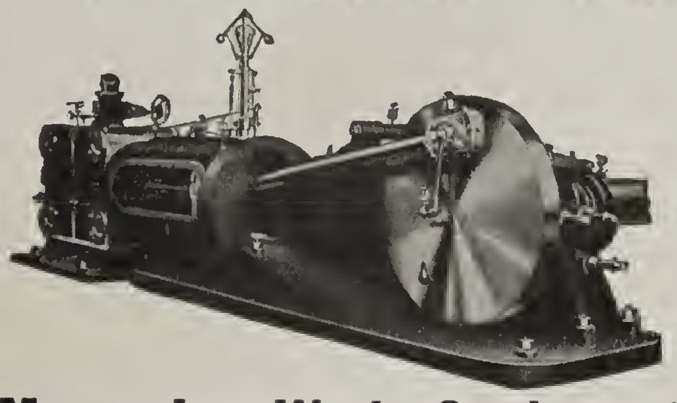
L. B. Rainey, a graduate of the Ceramic Department of the Ohio State University, and for about the last two years head burner at the large plant of the American Sewer Pipe Company, at Barberton, Ohio, will soon sever his connection with that company. On January 1, he will go with the Fallston Fire Clay Company, the head offices of which are in the Oliver Building, Pittsburgh, and plant at Fallston, Beaver county, Pa.

H. B. Potter, of the Los Angeles Pressed Brick Company, is now in San Francisco on a visit to the United Materials Company, selling agents in the San Francisco district. Mr. Potter says that building operations in Los Angeles are hardly as active as they have been, but there is still a very good volume of business, keeping the company's plants well occupied. This company is furnishing hollow tile and enamel face brick for the Broadway Department Store, about a $35,000 contract, and hollow tile for the Metropolitan building, for which the F. O. Engstrum Company has the general contract. This job is being put through in record time, with night and day shifts in all departments. The company's rebuilt plant at Santa Monica, Cal., which commenced deliveries the first of the year, has not resumed the manufacture of pavers, but is working mainly on sewer pipe, which is a new line for this company. The output is pronounced excellent, and some large orders have been taken, the sewer pipe business in the south being much more active than here at present. The company is also getting a good business in fire brick, having the Santa Fe Railroad business on contract, and some large orders from the Southern Pacific, as well as from southern cement plants. The company's Richmond plant has just taken another big order for common brick for the Standard Oil Company, which is constantly enlarging its big refinery at that place.

POTTERY

Pottery will be made a feature by the Cape Henry Silicate Company, which was recently incorporated at Wilmington, Del., with a capital stock of $200,00. The proposed location of the new plant has not been announced.

The capital stock of the General Porcelain Co., which will concentrate all of its Western plants in Parkersburg, W. Va., January 1, has filed its non-resident charter with county officials at Parkersburg, which shows its capital stock to be $750,000. This company has been erecting a large plant at Parkersburg to take care of the business done in several smaller



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CORLISS ENGINES, WATER-TUBE AND TUBULAR BOILERS

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Catalogue
No. 65-B

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The Name
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itself implies something—but its use proves **more**. It is remarkably durable and its initially good qualities last through out, until it is worn down to the thinness of paper.

It is anti-friction, has practically no shrinkage and is a glutton for heavy pressure and high speed.

H. W. GERLOCK, Huntingdon, Pa

"Buckeye Rails Are the Standard for Quality"

THE BUCKEYE ROLLING MILL COMPANY
Exclusively Manufacturers of First Quality Light Steel Rails and Accessories

BUCKEYE MEANS BEST — BEST MEANS BUCKEYE

Offices:
Steubenville, Ohio

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All Sections from
12 lb. to 40 lb.
per yard

Write or
wire us,
when in need.

No order too large to handle promptly or too small to secure immediate attention.

PERFORATED METAL SCREENS

As required for
BRICK
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PERFORATED SHEET METALS OF EVERY DESCRIPTION
HENDRICK MANUFACTURING CO.
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Manufactured
by
HENDRICK MFG. CO.
CARBONDALE, PA.

Triumph Steam Brick Dryer

The only successful low pressure system known without vacuum pump. Adapted for clay containing large percentage of moisture.

The C. O. Bartlett & Snow Company
CLEVELAND, O., U. S. A.

THE RICHARDSON-LOVEJOY ENGINEERING COMPANY
COLUMBUS, OHIO
CERAMIC ENGINEERS
FACTORY ARCHITECTS

Geological Examination of Properties
Clay Testing
Investigations of Manufacturing Propositions
Plants Designed, Construction Superintended and Operations Directed
Driers, Furnaces, Kilns
Remodeling Old Plants Given Special Attention
Development of New Lines of Products

Pamphlet, "Ceramic Engineering." Free

COST-KEEPING

is being advocated by the organized Clay-Industry. As soon as you have found some of your burning costs exorbitant, send for a Frink Engineer with his

FRINK METHOD

THE FRINK PYROMETER CO.
LANCASTER, OHIO

We Reline Press Boxes

We reline any make and for any shape brick. No job is too exacting for us — none too small or too large

We make Kiln Bands, Kiln Band Lugs, and Grey Iron Castings for Grinding Pans. Special Foundry Orders are a Specialty. Submit sketch or specifications.

Repairs for
Brick Machinery and Dryers

We solicit inquiries from discriminating buyers. What are your requirements?

Bolivar Foundry and Machine Company
BOLIVAR, PA.

plants in the East Liverpool, O., district. Many workers will remove to Parkersburg from East Liverpool and take positions in the new plant.

The Colonial Pottery Co., at East Liverpool, Ohio, which started in the sanitary business less than a year ago, has given up that trade, and will hereafter devote its exclusive attention to the manufacturing of domestic pottery.

The capital stock of R. Thomas & Sons, of East Liverpool, Ohio, has been increased from $400,000 to $550,000. This concern manufactures electric porcelain goods of all kinds, especially the line used in connection with high tension systems.

The Paul Richter Company, of Maywood, Ill., was recently organized with a capital of $25,000 to manufacture and deal in cut glass, pottery, etc. Paul Richter, A. N. Winterroth and Henry Bucholtz, all of Chicago, are the principal parties interested.

Ground has been broken by George Ahrendts at Grafton, W. Va., for the erection of a new seven-kiln plant. The owner of this new property lives in Chester, W. Va., and has been selling ware for many years having formerly been office manager for the Brunt Pottery Company, before that concern went out of business.

The new addition of the Taylor-Smith & Taylor Pottery Company, at Chester, W. Va., will not likely be placed in operation until the latter part of this month or early in January. This concern is already using its enlarged decorating shop, but the new clay shops and kiln sheds will not be completed for some weeks.

Art potteries in the Zanesville (Ohio) district are crowded with business but the kiln capacity of this trade has not been increased to any extent this season. On the other hand, it is reported that during the last six years, ten concerns which started to manufacture art pottery have either failed or converted their plants into other pottery lines.

The porcelain plant at New Lexington, Ohio, which has been idle for several years, is being rebuilt and remodeled and will be put in operation within the next few months. L. H. Holderman, of Chicago, representing the Middle West Utilities Company, is superintending the repair work. When completed, it is said that this plant will be equipped with the most modern equipment.

At Cambridge, Ohio, promoters of the new pottery company who recently purchased from Charles L. Campbell and A. S. Murray a tract of land of three acres near that place, will soon start to erect a new plant. Attorney Milton H. Turner is at the head of the company, which he says will be capitalized at $60,000. A number of Cambridge men will be stockholders in the concern.

James Pass, president and general manager of the Onondaga Pottery Company of Syracuse, N. Y., died at his home in that city on Thursday, Oct. 30. Mr. Pass was a lifelong potter, having been born in the great English pottery district centering around Burslem, Staffordshire, fifty-seven years ago. He was a charter member of the American Ceramic Society and was prominent in social and fraternal circles in the home of his adoption.

Plans have been announced by Ransbottom Bros., the largest stoneware pottery manufacturers in the Zanesville, Ohio, district, for the electrification of its plant. Central Station power will be used from the Southeastern Railway, Light & Power Company, and the contract for new power buildings at the plant have been awarded. This addition will occupy a site 300 by 70 feet, and will be the largest power plant ever erected for the use of an individual pottery concern.

George R. Ahrendts, for several years cashier of the First National bank at Chester, W. Va., has been elected secretary-treasurer of the Consolidated Manufacturing Co., of that place, which concern has started the construction of an eight-kiln pottery at Grafton, W. Va. Mr. Ahrendts will be associated with his brother, A. O. C. Ahrendts in the management of the new Grafton plant. The Grafton Improvement Club gave this company a guarantee of $10,000 to build this pottery there.

There is some talk among a few workers in the trade of having the National Brotherhood of Operative Potters, when a new scale is signed for the domestic branch hereafter, to have it continue for a four-year term instead of for a two-year period as has been the custom. It has been pointed out that if such a change could be worked, it would save the Brotherhood a considerable amount of money, and worry about a new wage agreement would be scattered to the four winds. However, no official action has been taken upon this proposal.

The Department of Commerce is clearing up its investigation of the pottery industry in New York and New Jersey, and a number of clerks in the department offices at Washington are busily engaged tabulating the great mass of data collected by the field force. The work in New York and New Jersey practically finishes the American field in this industry. It is stated that the probe will be extended to foreign fields within the next month, and that the conditions surrounding the industry abroad, including wages, cost of production and working conditions, will be gone into just as thoroughly as in this country.

William Watts Taylor, the man who made Rookwood Pottery famous, died recently at his home in Cincinnati, Ohio, after a brief illness. He was aged 66 years, and never married. Those beautiful tone effects that distinguished Rookwood pottery, the exquisite color schemes, marine tints and shadings taken from any pottery, ancient or modern, were engendered in the artistic brain of Mr. Taylor, who, while a good business man, was at heart a real artist. It was through the work of Mr. Taylor in blending colors on ceramics that Rookwood pottery achieved its high standard of praise at the World's Fair in 1903. Mr. Taylor was a graduate of Harvard College and had been associated in years gone by with his father in the cotton brokerage business, later succeeded to that business himself. All this time, however, he kept art uppermost in mind. and some of the most beautiful Rookwood creations found their way into his home instead of being sold in the open market. The pottery trade at large knew little if anything about Mr. Taylor, as his connection with the Rookwood pottery industry was a matter that was never sounded from the housetops.

When it comes to pottery tariff, the new schedule, it is reported, has not reduced the cost of imported ware to the American consumer. If anything, just a bit more is to be paid for the imported product. This has come about through the foreign manufacturers having been compelled to pay more for labor and materials, and the importers having to pay a higher ocean freight rate than formerly. These increases, it is asserted, amount to more than that taken off by the reduced tariff. American made pottery is being sold on the same basis as heretofore, and there is little probability, it is said, that these prices will be lowered or advanced. Should this condition maintain the wage agreement recently signed in New York will not be re-opened on February 1, nor on August 1 next, but will remain in effect for two years, dating from Oct. 1 last.

FIRE BRICK

The Southern Refractories Company has been incorporated at Wilmington, Del., with a capital of $100,000. The incorporators are Charles B. Bishop, Harry W. Davis, and Clarence J. Jacobs, all residents of Wilmington.

Announcement has just been made that the Thornton Fire Brick Company, of Grafton, W. Va., whose plant was recently destroyed by fire, will be rebuilt at once. This plant will be equipped with modern machinery, and will have a larger producing capacity when completed than did the former factory.

Claysburg, W. Va., is much interested in the progress being made in the erection of the new silica brick plant there by the Standard Refractories Company. More than 300 men are to be employed, and it is reported that at least 100 homes are needed in the vicinity of this plant for the housing of the employes.

Operations have been resumed, after a brief idleness, at the plant of the Scioto Fire Brick Company at Sciotoville, Ohio. Superintendent Charles Tuener announces that the company has booked an order for fire brick from the American Arch Company, of Chicago, that will insure the continued operation of the plant for some months to come.

COMMON BRICK

George W. Selleck and Caleb Lee have bought the common brick plant of Kurtz & Co., at Harmerville, Pa. It will be remodeled and put on the active list at once.

The New Orleans Brick & Stone Company of Gretna, La., has been incorporated with a capital of $160,000. It is reported to have purchased a site with a frontage of 200 ft. and will establish a brick plant.

The Pioneer Brick Company, which has its principal plant at Visalia, Cal., has purchased 160 acres of clay land near Bakersfield, Cal., leasing other land in the vicinity. It is stated that the material will produce fire brick of exceptionally fine quality.

Harry Harper, of Mt. Carmel, Ill.; J. B. Ford and George Davenport, of Harrisburg, Ill., have taken over the brick and tile plant formerly operated by the J. B. Ford Lumber Company, of Harrisburg. It is planned to make improvements to the plant and start operations in the Spring.

FLOOR AND WALL TILE

E. P. Lippencott, of Ben Avon, Pa., who is at the head of the Pittsburgh Tile Company, of Pittsburgh, Pa., and whose plant at East Liverpool, Ohio, was recently destroyed by fire, is having plans made for the rebuilding of the plant.

T. B. Owens has taken title to the property in Metuchen, N. J., on which his new factory will be built, and engineers are at work on the plans. The building will be 125 x 500 ft. and will cost $150,000. The plant will produce high grade floor and wall tile. Mr. Owens runs a similar plant at Zanesville, Ohio.

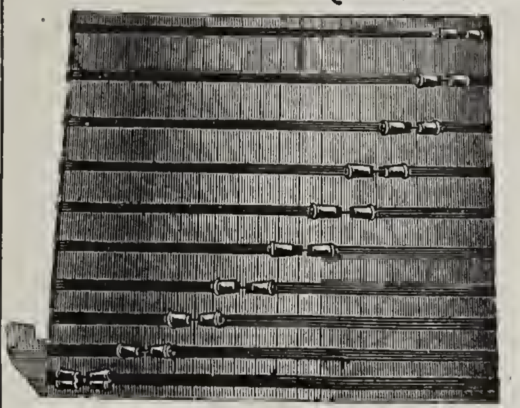
W. H. Chapman & Son of Wheeling, W. Va., have been awarded the contract to furnish and install the necessary tile work in the two-story addition to the Reynolds Memorial Hospital at Glendale, W. Va., south of Wheeling on the Ohio River. A contract for 15,000 square feet of floor tile to be installed in the Wheeling Hospital was also awarded this company.

HOLLOW BLOCK

Plans are being drawn by Architect O. G. Traphagen for a fine building for the Bishop estate at Honolulu. It will cost about $1,000,000, having a frontage of 110 ft., and will be built of steel, brick and terra cotta throughout.

There has been a decided improvement in the fire-proofing business of late, and this is reflected through two large orders recently booked by the National Fire Proofing Company, the principal offices of which are in Pittsburgh, Pa. These two contracts aggregate about $700,000 in value. One is for the furn-

Pyrometer Advice
Use an accurate pyrometer—or burn by the old method.
Insist on the "Accurate pyrometer's" adaptation to your needs.
Result—Decreased manufacturing cost. Material Improvement in Product.
The Stupakoff Laboratories
Pittsburgh, Pa.



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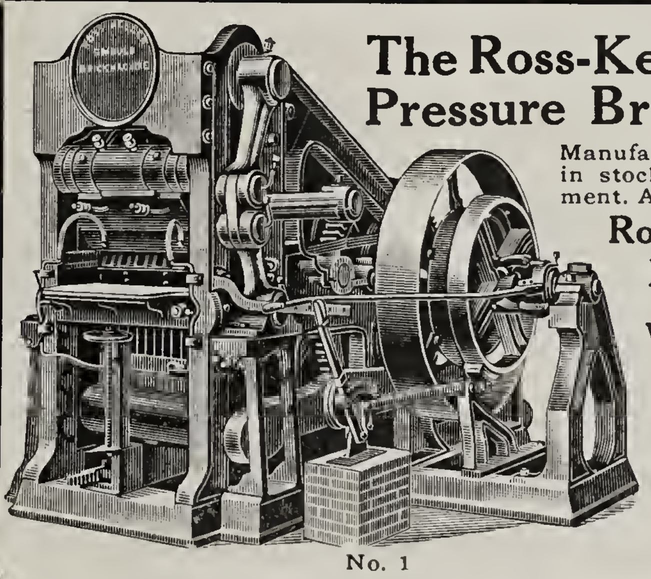

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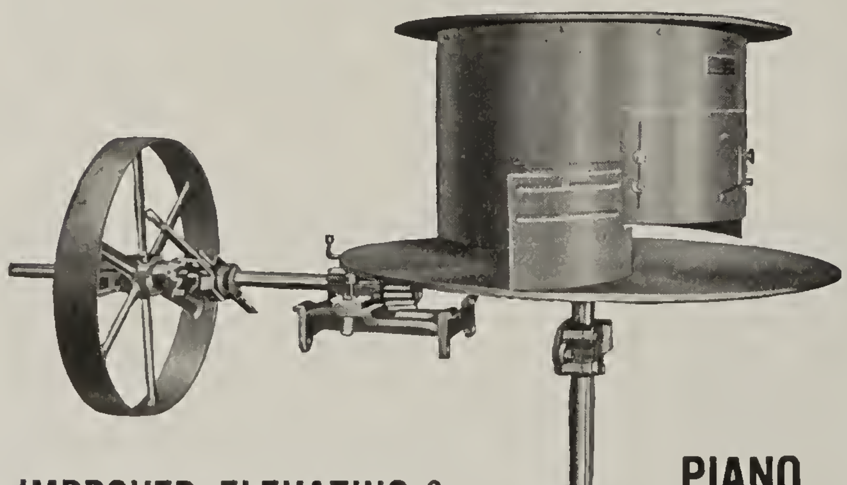

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ishing of the fire-proofing material for the new Equitable Building in New York, worth in itself over $500,000, and which is reported to be the largest single contract of this character ever booked by a Pittsburgh concern. The National also took the contract for the fire-proofing material that will be used in the construction of the new buildings for the Ford Motor Car Company that is to be built in Columbus, Ohio.

SEWER PIPE AND DRAIN TILE

The town of Venice, Cal., is preparing to lay a lot of 20-in. sewer pipe for a storm drain.

Considerable excitement prevails in commercial circles at Wampum, Pa., over the report that a sewer pipe plant may be established there soon after January 1st. Clay from a large deposit found on the farm of J. Bieber, at Wampum, was sent to the plant of the American Sewer Pipe Co., at East Liverpool, Ohio, for severe tests. It is said that the samples were found to possess merit, and now there is talk of the erection of a plant on the farm. Wampum is on the Pittsburgh & Lake Erie and Pennsylvania roads, less than 50 miles west of Pittsburgh, Pa.

Joseph Hodges, of Morrison, Ill., will abandon his tile works at that point and start anew in Lyndon, Ill., where he has purchased twelve lots, close to the C., B. & Q. tracks. He will start the erection of a tile factory that will be sixty by eighty feet in dimension, and it is thought will be but one story high. Mr. Hodges has ordered the lumber for the new plant and intends adding a great many more machines, and they will be machines such as are used in up-to-date tile factories. Among the number will be forty more curing cars. This will add much to the plant. Mr. Hodges started in the tile making three years ago last March in a modest way. He has increased his business greatly, for there was a great demand for his tile.

FREIGHT TARIFFS

The Eastern Paving Brick Manufacturers' Association has filed a complaint with the Pennsylvania Public Service Commission, at Harrisburg, Pa., against the advance in rates which was filed by the railroads to take effect Nov. 7, but which action acted as a stay. The Association has asked that the advanced rates be suspended pending a hearing by the commission. The date for the hearing has not been set, but is expected to be announced at an early date.

A Washington dispatch says that complaint has been made to the Interstate Commerce Commission by the Plymouth Clay Products Company against the Fort Dodge, Des Moines & Southern railway, Homer Loring and Parley Sheldon, its receivers, and also against the Milwaukee and the Duluth and Iron Range roads. The company manufactures clay products at Fort Dodge. It alleges the roads exact unjust charges from Fort Dodge to Minnesota points and demands reparation.

Increased rates on brick in car lots from the Hocking, Shawnee and Zanesville groups in Ohio. to Huntington, W. Va., have been found not to be justified by the Interstate Commerce Commission. The new rate has been withdrawn at least until March 29, 1914. A protest against the advanced rate was made by brick manufacturers located at Trimble, Glouster, Logan, Nelsonville and Athens, Ohio, points that are located in what is known for rate-making purposes as the Hocking, Shawnee and Zanesville group. This extends from New Straitsville South to Hamden, and from Athens North to Glouster.

Correction.

In the October 7 issue of "Brick & Clay Record," a rate of $3.50 per net ton was published, on fire brick and fire clay, from Portsmouth, Ohio, to Fort William and Port Arthur, Ont. This was an error, and should have read $3.90 per net ton. We take this opportunity of thanking Kilburn D. Clark, Buffalo, N. Y., for calling our attention to the mistake. In any similar event, we will be very grateful to any reader who will let us know when we are in error, or when he is in doubt.

The following changes in freight rates affecting clay products have become effective since our last issue:

From Eastern Points.

From North Oxford Mills, Mass., Common brick, to Winchester, Mass., $1.05 per net ton.

From Middle West Points.

From Cadillac, Mich., Brick and articles taking same rates, to Alma, Mich., $1.05 per net ton; to Farwell, Mich., 85c per net ton; to Grand Rapids, Mich., $1.05 per net ton; to Howard City, Mich., 35c per net ton.

From Chicago, Ill., Brick (except bath and enamelled) and articles taking same rates, to Fond du Lac. Oshkosh and Manitowoc, Wis., 7c per cwt.; to Marshfield, Wis., 9c per cwt.; to Eau Claire, Wis., 10c per cwt.

From Mason City, Iowa, Brick and articles taking same rates, to Ironwood, Mich., 14c per cwt.

From Southern Points.

From Mentor, Ky., to Bridgeton, Brighton and Summit, Ohio, 65c per net ton.

TRADE REVIEWS

New York.

Eastern business is at a standstill. Brick, steel, stone, lime, plaster, lumber, stocks and dry goods, foodstuffs—everything—is included in that statement, but we think we see signs of a change for the better.

A survey of the entire building situation in New York made within the last month, and including the whole metropolitan district, delving deeper than the architects' boards, and reaching even past Wall street, has developed some interesting phenomona. It extended down to the savings bank depositor and the view he takes of his future prosperity. Big men in financing, contracting, designing and renting have been interviewed and their analyses of the construction outlook are remarkably similar. Their composite observations are, at least, refreshing.

Stepping back to the 1907 depression we find the root of the present disturbance. The year 1908 opened with a country-wide boosting movement. Business activity was artificially stimulated. Tons of money were dumped into business expansion and into building enterprises. The following year was a marker for building erection—whether there was a demand for it or not. In that year vast speculative operations were forced through to actual construction work. Whole districts, the Washington Heights, the Hunts Point section, Queens Borough, Bay Ridge and Flatbush, the Weequahic Park and other developments in Newark, the Boulevard extension in Jersey City, the business boost that Hoboken fostered, the development in the outskirts of Elizabeth, N. J., the vast building movement along the Erie, Lackawanna and West Shore roads in North Jersey; all felt the presence of the speculative builder. In the lower end of Manhattan the Woolworth building was projected hardly before the mortar was dry in the Liberty tower and the Bankers Trust and Whitehall buildings, all giants. These were not completed before the Western Union and Equitable buildings were projected. The loan engagements for all these structures were being negotiated then.

From 1910 to 1912 vast credit extension was the natural consequence. This was as true of building projects as it was of other lines of commerce. The day of wholesale liquidation had to come some time, and 1913 was just five years after the artificial boom started and the first liquidation movement was due.

But politics intervened the year previous. An administration came into power that did not have the endorsement of the majority of the voters of the country, but its power was nevertheless absolute. The day had come when new standards of industrial and business conduct had to be set and the new administration proceeded to introduce it. The change was radical and, like all radical changes, a brief period of stagnation was a natural sequence. A full understanding of the new standards was necessary before they could be put into operation. Business awoke to the fact that it not only had a new tariff law to adjust itself to, but its very money system was subject to a general overhauling and the income tax, collectable at the source, was a puzzle.

Business, however, had been able to discount the tariff. It could bump along under a new currency law, but when millions on millions of dollars were subject to a government tax at the originating point of its income making capacity, business everywhere groped for the point at which collections were to be made. And it is still groping.

Instead of liquidation of the over-credits of previous years proceeding in a natural way, it was checked, to say the least, and further extensions of credit were the rule rather than the exception. On the plea that they did not understand the income tax law, debtors withheld payments. This made money tight, but it did not affect credit and the result is that business has been conducted largely on paper instead of cash for the last year or more. Retrenchment followed down to the very man in the shop and the result was that the flow of deposits into savings banks was checked and the banks were not in the lending market because they did not have the money to lend. The shortening of the supply of money flowing into Wall street soon affected the buying and selling of stocks and bonds and mortgages and assignments fell off correspondingly. Then the insurance companies, the largest lenders of building money in the East, shut off further building engagements and the demand for clay products in common with all other lines of building material dropped to extreme low levels.

Rumors of war with Mexico have aggravated the situation. Intervention means a further weakening of the money market. Ultimately it may mean another tax. This makes financiers timid.

Here enters an old actor in a new role. It is the tariff. When the administration tariff scheme was first suggested, business took on a coat of gooseflesh. The mere mention of a cut in imposts brought on chills and fever. But the tariff ghost has lost its terror and is actually showing signs of being the cause of an early revival of building here in the East.

It is an axiom that a manufacturer can make much of one thing cheaper than he can make a little. Eastern manufacturers under the new tariff have to meet international competition on many commodities. For the most part Eastern manufacturers have built their factories on a protective tariff scale. Now they have got to expand.

Already, vast factory areas on the New York harbor have been taken up for industrial expansion. In the Jersey meadows, for instance, the American Radiator Company is building a quarter of a million dollar store house and factory. The American Cotton Oil Company is taking bids of a half million dollar plant not far away in Bayonne. The National Detinning Company is buying up vast tracts of land in Elizabeth, N. J., for an extensive factory, the United States Steel Corporation is figuring on establishing its export mills in this harbor, involving more

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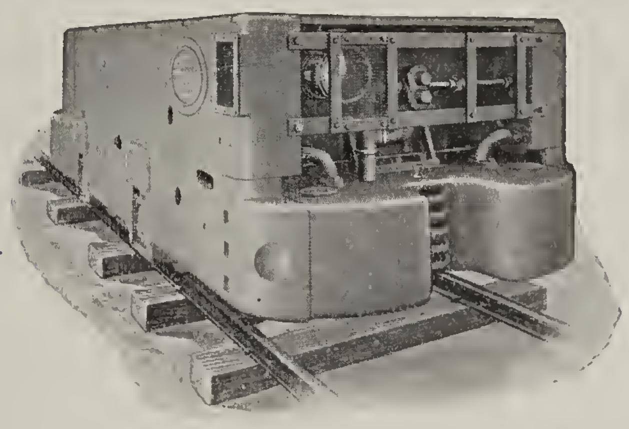

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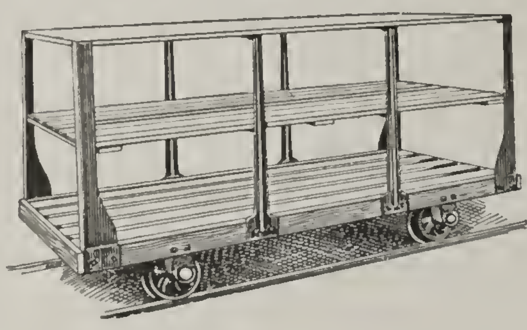

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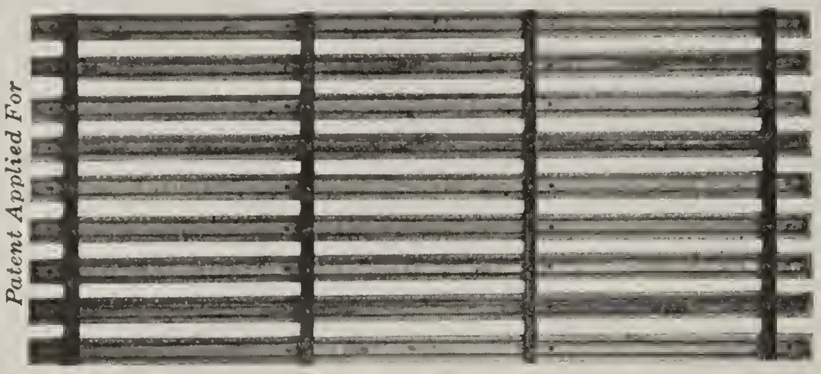

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than a million dollars in factory and mill erection alone, there are to be vast iron smelters and furnaces erected along the Hudson in the effort to revive the old iron industry in the East to meet the new tariff conditions, the Bush Terminal Company plans to erect several new manufacturing buildings in South Brooklyn, involving half a million dollars, the Pheonix Art Metal Company is rushing a big new factory to completion at College Point, L. I., on the East river; a cold storage plant to take care of foreign meats is to be erected at a cost of $135,000 at 184th street and Amsterdam avenue for the Ice Manufacturing Company; the Vacuum Oil Company already has let its contract for the creation of a big factory costing $200,000 in Bayonne, N. J. The Adriance Machine Company, of Brooklyn, will meet foreign competition on machinery by erecting a $100,000 factory in Van Brunt street, Brooklyn; the National Cloak & Suit Company is already excavating for a $300,000 new factory in Seventh avenue which will be an extension to its already large manufacturing building; the Knickerbocker Ice Company is to increase its cold storage capacity for meats and foreign produce at Elizabeth and Broome street at a cost of more than $200,000. And so on, down the list, which is too long to publish here, of factory buildings projected since the tariff law emerged from the conference committee. All these buildings are being erected with private capital and are not dependent upon institutional money, so they are bound to go right ahead.

Business, therefore, is out to meet foreign competition. Larger works mean more employes. More employes mean more savings in banks. More saving in banks mean an easier Wall street money market. Money to invest in Wall street means a greater demand for mortgages and a greater demand for mortgages means more buildings. More employes in factories means more housing facilities. This means more tenements and apartments in New York and more individual homes in the suburbs. Larger settlements mean more theaters, more hotels, clubs and other types of buildings, and this means a bright business outlook for the brick maker.

San Francisco, Cal.

The brick business remains rather quiet. Rain at frequent intervals during November has retarded building operations somewhat, and deliveries have been delayed, while some of the plants have been closed for the Winter. A few large contracts are coming out, the largest being for the municipal auditorium, but the bulk of the business just now is on hotels and apartments of a comparatively unimportant nature. The surplus of common brick, however, is moving off fairly well in the outside shipping trade, and altogether conditions are about as usual at this season.

Prospects for next year are good in all clay products. Aside from the many local buildings for which plans are being drawn or figures taken, increased activity is expected in the country. It is predicted that the opening of the Panama Canal, which will probably occur in the Spring, will bring a great influx of population, and especially of rural population. This will necessitate the enlargement of warehouse space at many distributing points, and will call for the construction of more schools and other buildings of a permanent nature. With the development of farming land, the matter of drainage, hiherto neglected in California, is beginning to receive attention, and the outlook for drain tile is fairly encouraging.

The sewer pipe business this year has been of smaller proportions than for some time past, but there are better things in prospect, as many towns are now getting out bond issues to cover sewer extensions, and quite a number of new towns and additions are being opened up. Municipal securities, which could hardly be sold last summer, are now being marketed with little difficulty.

Louisville, Ky.

The demand for brick in this section just now is at an extremely low ebb, as there is very little building of any sort going on. Most of the manufacturers are making deliveries on old contracts, but are drawing part of their shipments and deliveries from reserve stock, as the outlook for business for the next six weeks or two months, if not longer, is far from bright. Current orders run rather small, as well as few, and do not call for very active operations at the plants.

Hollow tile and fireproofing and sewer pipe are much more active in this immediate locality than are brick of any kind, on account of a number of jobs which are now under way and which are calling for a good deal of material. There is also a fair demand for tile and vitrified pipe in Southern territory, although the total amount of this business in sight does not reach any great volume, and indications are that it will slack off considerably shortly.

The general tendency among manufacturers of clay products in this section, therefore, seems to be as indicated—to reduce reserve stocks materially, in view of the prospect of slow business for some weeks to come, and to cut down operations to the minimum while waiting for things to liven up, in order to reduce expenses during the interim.

The P. Bannon Sewer Pipe Company has been very busy of late, as this concern has the contracts for supplying both of the large sewer jobs which are now under way in the city, and this work is expected to keep things moving for some time. There is also a fair amount of out-of-town business, which is calling for material for immediate delivery. Prospects are not good for new work, however, and the company does not anticipate much activity until Spring, as the Winter does not generally witness much new sewer work.

The Kentucky Vitrified Brick Company is making up practically its usual output of fire brick and hollow tile at this time, according to general sales manager A. P. McDonald, as numerous small jobs in and around Louisville, and two fairly large ones, the Parr's Rest job and the Date street school, are using considerable material just now.

The R. B. Tyler Company is finding the demand for high-grade face brick somewhat slow, the demand having fallen off almost to nothing. A few small orders are received, but practically none of any size; and there are no new buildings worth mentioning in sight just now. The company is not expecting any heavy demand for this line of its goods until Spring, when building may be expected to regain normal proportions.

Jugs are an active line just now with the Louisville Pottery Company, the Christmas trade being usually good in this line, as the appropriateness of "the little brown jug" as a container for liquid refreshments at this season is never overlooked. The manufacturing season is also on with the vinegar plants in this vicinity, and these and other consumers are calling for an average large quota of jugs. Flower pots are selling fairly well, and flue thimbles have some demand, although the increasing use of furnaces for residence heating has cut in upon this line of goods to a considerable extent. K. P. Snyder, of the pottery company, was out of the city for several days last week on business.

The Owen Tyler organization has busied itself lately more with its lines of weather strips, wallboard and steel furniture than with clay products, as the latter lines are falling off, as usual at this season. Isaac H. Tyler recently returned from a trip to Shelbyville, Ky., where he placed a bid for the steel furniture to be used in the new courthouse at that place. An order was received recently for 20,000 Hytex face brick for use on the Schulten residence in Louisville, at Baxter avenue and Edenside street, indicating that building is not yet entirely over for the Fall.

Owen Tyler recently made a suggestion, through the board of directors of the Louisville Commercial Club, which will probably be placed in effect, judging from the approbation with which it was met.. Mr. Tyler, pointing out the success of the "Made-in-Louisville" exposition held early in the Fall, suggested that a building be erected on the State Fair grounds in which to hold such an exhibit every year, and this will probably be done before the next State Fair is held. "Made in Louisville" brick would of course be used in the construction of the building, as it is intended to be of a permanent nature.

Donald McDonald, Jr., was one of the witnesses on behalf of the Louisville Board of Trade at the recent hearing of its complaint against the Louisville & Nashville Railroad Company based on the latter's switching regulations, which are alleged to be unfair and unjust, and to hinder the commercial and industrial development of the city. Mr. McDonald testified that he found it necessary in a certain case to make a personal appeal to the road's traffic manager, an old friend, in order to get cars moved. Local brick and clay manufacturers generally, as well as others, are much interested in the outcome of the complaint, which will be decided within a few months by the Interstate Commerce Commission.

The proposed improvement with vitrified brick of a considerable distance on the Cane Run road, within the city limits of Louisville, recently fell through because there were no bidders, a rather unusual state of affairs. It is understood, however, that the reason for the lack of bids was that the contractors would have had to look to the property-owners for their compensation, under the terms of the letting, and that they did not consider the abutting property sufficiently valuable to warrant handling the work on that basis. It is probable that the city will ultimately have to do the work at its own expense, as reconstruction work is done.

The Louisville Brick Company has finished deliveries on the largest contract which it handled during the Fall, a warehouse for the Kentucky Distilleries & Warehouse Company at Louisville, and is now cleaning up on a number of small orders, which are the only kind being received. Joe Nevin said recently that the largest order on file at his office is one for 15,000 face brick, which is a sizable order for this season. Small orders for soft, salmon and hard brick for residence work are the bulk of the business. The incursions of the concrete block are beginning to be felt in the brick business in this section, according to Mr. Nevin, especially for use in small dwellings of the bungalow type.

P. M. Crane, secretary and treasurer of the East End Brick Company, of Louisville, called attention recently to the erroneous impression created by a report to the effect that that company is controlled by the Hillenbrand Brick Company. This impression is probably due to the fact that Oscar Hillenbrand, president of the East End Company, and A. B. H. Hillenbrand, Jr., general manager, are sons of President Hillenbrand, of the Hillenbrand Brick Company. The two companies are not connected in any way, however, according to Mr. Crane. The East End Brick Company is making deliveries at present on the Date street school building and the Parr's Rest building in Louisville, the two aggregating about a million brick.

Shipments of 28,000 to 30,000 brick a day are being made by the Hillenbrand Brick Manufacturing Company, which run from 6,000 to 8,000 beyond the number of brick which the company is making. Shipments are being made of brick hot from the kiln, only such brick as are necessary to fill out orders being taken from the reserve stocks.

Enough small orders are being received by the Louisville Fire Brick Company, according to J. H. Bell, an officer of the company, to keep things fairly active. A wide territory is covered by the company's business, and the number of orders received from this territory is usually such as to make it worth while to keep running to supply them, even during the dull season.

The extent to which wet land can be reclaimed for profitable use by tiling is being realized by Kentucky farmers more generally than ever before, and indications are that manufacturers of clay tile are going to have an unusually good sale for this material in the future. Even at the present time there is a growing demand for tile for this purpose, and as the success of drainage by this means is proved, a much larger number of farmers may be expected to resort to it.

Columbus, Ohio.

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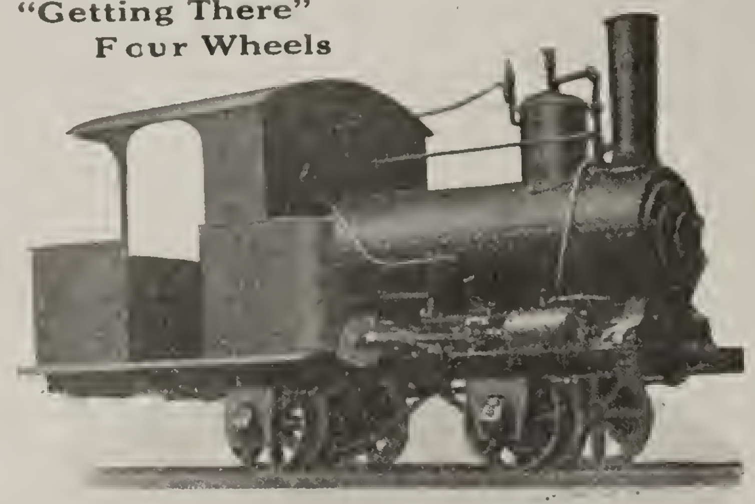

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alone there will be spent in the neighborhood of $5,000,000 during the coming year in structures of all kinds, many of which will be large undertakings. Architects and contractors are busy on plans and specifications for these structures and material men are already getting busy also. Despite the depression which appears to have taken possession of certain lines of industry the brick business is good and every one connected with the industry is optimistic.

Among the structures which will be erected in Columbus the coming season are the Elks Home on East Broad street to cost about $200,000; a club house for the Columbus Athletic Club on East Broad street to cost in the neighborhood of $300,000; a large interurban depot to cost $500,000; a bank and office on East Broad street; an eight-story retail business block on North High street for the Z. L. White company; a $125,000 wholesale grocery on Naghten street and about $300,000 in church edifices. In addition plans are being prepared for an enormous $1,000,000 hotel at Broad and High streets on the Deshler property.

Brick manufacturers, especially those engaged in making face-brick, are having a good run of business for the lateness of the season. While the volume of business is falling off, which is natural, still trade is holding up better than usual. Plants engaged in making face-brick are being operated with full forces.

Columbus manufacturers and dealers are preparing to attend the meeting of the American Face Brick Association and the Face Brick Dealers' Association, at French Lick, Ind., on the 10th, 11th and 12th of the present month.

Several Columbus brick agencies are experimenting with motor-trucks to determine their availability to deliver common brick. The dump type of trucks are being used.

Paving brick manufacturers in Columbus and the Hocking Valley have experienced a good year which is still active. Their plants have been run to their extreme capacity and still the demand has not been satisfied.

Philadelphia, Pa.

Activity in dwelling operations during the week shows that the operative builders are still busy and are likely to be still busier shortly, as several large plots of ground have been acquired by builders who announce their purpose to erect dwelling houses.

The largest of these operations will be put under way at Second and Allegheny Ave., where James Arthur will construct 150 houses of an attractive style of architecture; they will contain the latest improvements and embody many features that will lessen the labor of housewives.

Developments will also be made of a large lot of ground on Richmond St. near Orthodox; other operations which are planned to start very shortly will centre at Venango and Memphis Sts., where 30 handsome dwellings will be put up with modern and up-to-date improvements; still another fine operation will be built at Fourth and Wingohocking Sts. This operation will comprise 65 dwellings and will cost over $200,000.

Joshua M. Holmes, owner and builder, will also start immediately to build an operation at 26th and Clearfield Sts.

Mr. George Bourne will also start an operation in West Philadelphia at 58th and Lansdowne Ave.

These dwellings that are being built or planned will range in price to suit all purses and classes, and will run as low as $2,000. The majority will range from $3,000 to $5,000.

These levels appeal to prospective buyers and in consequence the bulk of the houses now being built are to be within these figures.

All of these operations will be started and pushed ahead as rapidly as possible to have them ready to be sold in the early part of next year.

The beginning of the work on several more moving picture buildings has lent a touch of activity to the building operations under way in various parts of the city. At Germantown Ave. and Oxford St., the Land Building Co. has broken ground for a $11,000 Photoplay house for M. Jacob Markinauri; it will be of brick and will be unique in its exterior lines.

Two other theatres are going up, one at 8th and Filbert Sts., another at 2nd and Ontario Sts. Both of these buildings will be of brick.

Kansas City, Mo.

Though the building trade is rather quiet in Kansas City at present, most of the brick plants are being operated steadily, and will run throughout the Winter, barring unexpected developments. Stocks on hand are of good-sized proportions in some instances, but so much important work is in prospect that manufacturers and dealers alike view this fact with gratification rather than otherwise. All sorts of rumors of big jobs are floating around Kansas City, and many of these will crystallize in the near future. At least two big hotels will go up during the next year. A big milling plant is to be erected, while the usual flow of residence work will be in evidence. The brick trade is inclined to take an optimistic view of the situation because of the bright prospects for 1914.

While the Western Paving Brick Manufacturers' Association is ready to begin work on Sixth street at any time, the wood and granite block people are not prepared for the test, recently announced, and the paving of that thoroughfare will not take place before next Spring, according to an announcement by Secretary G. W. Thurston. The paving brick interests welcomed the opportunity to demonstrate the superiority of burned clay brick as a paving material and hoped that the work would begin immediately. The others interested, however, have held out for a longer time in which to prepare for their part of the work, which will be watched closely by municipal authorities throughout the West, as well as property owners and others interested in paving affairs.

The annual meeting of the Western Paving Brick Manufacturers' Association will be held at the new quarters in the Dwight building the third Saturday in January. A good deal of interest attaches to the event, in view of the recent activity of the Western association. Secretary G. W. Thurston's retention is assured, his regime having been highly successful.

Brick manufacturers of Kansas lost another point to those of Missouri when new rates were published by railroads recently. Missouri brick manufacturers are conceded a rate of 40 cents a ton for the first fifty miles by the new tariffs, or two cents a hundred pounds. This gives the Missouri manufacturers an opening wedge that can hardly be combated by the Kansas members of the trade. The latter will be at a distinct disadvantage in shipping to Missouri points under the new freight rates.

The new plant of the Waverly (Mo.) Brick & Tile Company, in which capital of that place is interested, will be ready for work early in the Spring, according to information received by Kansas City brick men. The new company will begin with an initial output of 50,000 daily. Common brick will be made, while face and pavers will be added a little later.

The Eadie Building Supply Company, of Kansas City, has made a splendid record for the first eleven months of 1913, and will run about 2,000,000 ahead of last year in the matter of brick placed. The company represents manufacturers of Kansas, Ohio and other brick centers and has pushed burned clay briskly during the past year, with flattering results. The total for the year will run around the twenty-million mark, according to President Eadie.

The vertical fiber brick contract which will be placed at St. Charles, La., on December 11, is attracting much attention from Kansas City paving brick men. The Western Paving Brick Manufacturers' Association will bid on the work through its various members. About 40,000 yards of paving is involved in the contract, one of the largest of the Fall.

Tracks have been laid into the new brick plant at Vale, near Kansas City, and work has been expedited to a marked extent. Operations were a bit slow because of the difficulty in getting equipment into the new yard. The Rock Island has completed its share of the work and the completion of the plant, which will have a daily capacity of 60,000, will be rushed for Spring work.

The brick plant at the Kansas State prison at Leavenworth, which has caused more or less trouble in the past, is still having difficulty in handling the convicts employed. Three convicts recently hid in the tunnel, hoping to make their escape later. Officials in charge finally got the prisoners out of their place of refuge by the use of straw. This material was set on fire and the convicts smoked out. They were able to withstand the smoke but a short while and finally emerged from their hiding place, half famished and wholly vanquished. Sentiment in Kansas and Missouri, not only among brick men, but with the general public, is strongly against the employment of convict labor. It is felt that this class of work could better be employed in road work, for which there is pressing need in Kansas. It is believed that public sentiment will eventually force the abandonment of the present system. The Kansas State brick plant provides the brick for all of the State institutions, even where it could be secured more cheaply from legitimate manufacturers or dealers.

The natural gas situation is still playing an important part in the activities of Kansas brick men manufacturers. Several plants have closed down altogether, while others are installing coal-burning equipment as rapidly as possible. One or two plants, notably the Standard Brick Company, of Coffeyville, and the Fredonia (Kas.) Brick Company, own their own gas, and will continue to use this fuel. However, even this method is a costly and not altogether satisfactory one. New wells must be drilled almost constantly, and pipe lines laid. A couple of other Kansas companies, including the Union Brick Company at Iola, are struggling along trying to burn gas, and operating about half-time. Cold weather always results in a depression as far as the gas supply is concerned, and few of the brick plants will be able to work steadily as long as gas is depended on exclusively. The brick manufacturers in the gas belt of Kansas are working under a severe handicap and one which will entitle them to much credit if they survive its inroads.

The Letter Box

Finds Much of Value in Butler's Articles.

We received a highly interesting letter from one of our closest readers—John Gundelach, of St. Louis, Mo.—some time ago, who wrote in reply to an article by W. A. Butler in the July 15 issue on "How to Make a Continuous Kiln Pay." Through some inadvertence this letter was mislaid and has just come to light, and inasmuch as it is just as interesting and timely now, we are giving it space with due apologies for having withheld it so long. It follows:

> After getting "Brick and Clay Record," which I always read with great interest, I saw on the page where I expected the Cox story this suggestion of William A. Butler: "There is more method in the operation than in the construction of a continuous tunnel kiln that makes them profitable."
>
> These words are very true. I do not agree in the fact that all kilns, even if they are not built exactly alike, will give the same excellent results. I agree in the idea, that it is better to have the stack or blower outside—perhaps 5 to 10 feet from the kiln, of course. The main flue, which includes the valves of each chamber, seems to me more practical in the middle of the kiln, as shown in Fig. 1 of the article. If the flue or smokechamber is in the middle of the kiln, it protects the man who works in the

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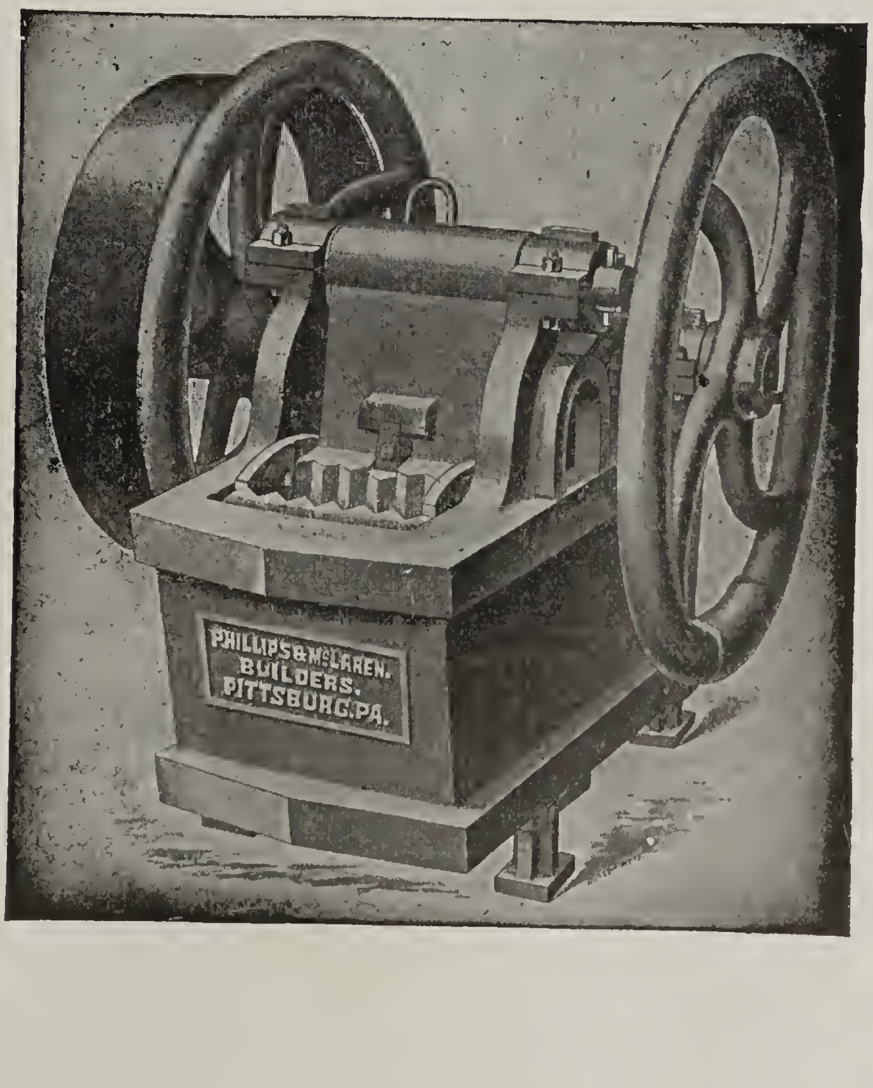

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> one tunnel sometimes from the heat, which comes in case of firing from the other tunnel. It would give more space in the ends to bow from one tunnel to the other and would give the opportunity to build the curve just as broad as the other part of the tunnel, which is practical and necessary for an excellent result.
>
> The curve in itself is already a space in the kiln, where the burner has to use more care and judgment than on the other part, and a reduction of this would result in a loss on time and capacity. Here it would be very practical to build a flue on the outside of the tunnel, ending in the valves of this chamber on the inside main flue.
>
> Now, we come to that part of the waste heat: In Fig. 4 I see the flue for the hot air or waste heat is on top of the kiln and along the side. I do not find this practical at all. This construction would make the work of the man who has to tend to the kiln for 12 hours in one shift very unpleasant. It would increase the heat on top of the kiln and would prevent fresh air and draft from going over the kiln. It also would result in a higher cost and more repairs.
>
> I worked with continuous kilns from my 18th year up to my 45th year, and I quit the waste heat system 20 years ago. After three to four years of careful examination of the Bührer, Hoffmann and Borup continuous tunnel kilns, I found that if I took any heat away from behind my fire I had to fire that much more to keep my fire and heat up to the standard where I wanted it. I found, also, that my fire was more scattering, and I found that I get less brick burnt. The only big saving and the way "to make a continuous kiln pay" is: Send the draft or air which goes through your fire as far ahead as possible; take the so-called waste heat behind the fire and protect the place of firing. This will give a greater pressure of air in the burning chambers, which will result in a uniform color and grade. It will give a slower cooling, which is in some cases necessary, and a better brick in general. Take the air from the blower, and if it is smoky let it go through the dryer if possible. Do not build too few chambers in a tunnel kiln—twelve is sufficient, but fourteen chambers is better.

It will be observed that Mr. Butler in more recent articles in this magazine has taken up some of the same ideas as are expressed by Mr. Gundelach, particular reference being made to the forcing of the draft to get a greater capacity from the kiln. This article appeared in the July 15 issue under the title, "How to Make a Continuous Kiln Pay."

Mr. Butler Interests This Reader.

Probably no series of articles in months have interested our readers so much as those contributed in recent issues of this journal by William A. Butler. In addition to the timely remarks of Mr. Gundelach printed above, we have a highly interesting letter from George Vater, of Cleveland, Ohio, one of the best known experts in the country on continuous kilns. Mr. Vater heartily agrees with Mr. Butler in the stand he takes, but contributes some additional suggestions which undoubtedly will be appreciated by the burner who is groping in the dark. We might add here that we have a very valuable article from the pen of Mr. Vater which will appear in an early issue. Here is what Mr. Vater says about Mr. Butler:

> I read with great interest Mr. William A. Butler's paper on "The Continuous Kiln—How to Increase Daily Capacity 100 Per Cent" in your issue of Nov. 4th. Though his paper, as usual, proves again the progressive mind of its writer, I believe that a few additional remarks on the subject-matter will not be amiss.
>
> Some of the terms coined by Mr. Butler, as horizontal updraft, draft point, downdraft horizontal, etc., seem to me not quite appropriate, and "air of combustion" can certainly not be substituted by "atmospheric pressure," without creating confusion. However, these are points of minor importance and do not detract from the value of his contribution in general. There are some other points, however, which need elucidation.
>
> The "draft point" of which Mr. Butler speaks depends almost entirely on the amount of draft supplied, though it looks plausible that extraordinary proportions in width and height of the tunnel may influence it to some extent, as Mr. Butler says. This condition of an apparent updraft is caused by the fact that the gases in the full fire have gradually assumed a very large volume; at 2,000° F., for instance, it is equal to about 5 times that which they would have at 32°. Consequently they will, if the draft is not sufficient to move them properly, take advantage of an opened stoke hole and blow out, more or less. It has been found, however, that this condition, anxiously guarded by the old-time burner, is by no means necessary. Better results as to capacity and equally good results as to quality of ware are obtained when a condition is maintained at this point, where neither a pushing out nor a pulling in will occur on opening a stoke hole. Where the kiln is operated with strong fan draft, as Bührer's kiln, and where the ware is common brick, it is considered good practice to eliminate even this neutral condition and to have all feed hole rows draw in. This fact enables Bührer to traverse with his fire up to 100 feet and more per day.
>
> With a kiln of a given cross section, by establishing the above neutral condition at the "draft point," the capacity can be greatly enhanced beyond that burning with several rows pushing out, provided a sufficient number of sections filled with brick is kept before and behind the fire. The faster burning, of course, also the mode of setting, should be

changed, lest uneven draft conditions influence the quality of the ware.

A daily progress of 16 ft. is entirely too little. A modern kiln is required to advance at least 30 ft. in 24 hours, and 45 ft. is not excessive. Depending on the quality of ware a tunnel length of eight to ten times the distance burnt per day has been found to be appropriate, though in certain cases twelve times this distance has to be allowed.

If Mr. Buler has found that in his kiln, at the intake, the air travels only at the bottom, and that there is a return hot air current in the upper portion, the reason for this behavior can only be sought in lack of draft and unsuitable setting in regard to the distribution of the draft. The only heat encountered at this point should be radiated heat from the hot brick and walls. When burning faster, with proper setting and a sufficient number of sections in the cooling range, even this heat will become bearable.

Mr. Butler's observation as to the beneficial influence of the wind entering the last cooling chamber is entirely in keeping with what should be expected. The pressure of the wind did what the slack draft could not accomplish, namely, distribute the air well over the whole face of the setting, and at the same time furnished some of the push, the lack of which, by virtue of too small a stack, did otherwise not let the draft come up to standard. Naturally, also, the increased amount of air burnt the coal up more lively and caused a better rate of progress.

This same principle is used in boiler firing and other furnace practice quite extensively and with excellent results.

For continuous kilns this system was introduced some ten or more years ago in Germany as the *Horn'sche Druckluft Verfahren.* The arrangement consisted in principle of a fan discharging into a sheet iron pipe located on top of the kiln. This pipe was provided with offtakes corresponding to the stoke hole rows and could be connected with the latter by portable pipes. This method was very favorably reported, stating that an increased capacity, to 50 per cent more, and a saving in fuel of 15 to 20 per cent had been obtained in a number of installations.

The saving in fuel may be mainly attributed to the fact that in burning under pressure a lesser amount of air is required, and that the infiltration of air through leaks in the walls, which under circumstances with purely induced draft may be quite considerable, is lessened appreciably. The faster burning, of course, also has a certain share in the greater fuel economy. For some reason or other, however, this system has not found very wide application, but was gladly accepted as a remedy in just such cases as Mr. Butler cites, where the draft, originally provided for, was not sufficient to do the work that was expected.

Regarding the reasons for the slack draft of a stack when starting a kiln, as set forth by Mr. Butler, it would appear that these are not valid. If we consider that the weight of air at 32° F. is 0.0807 lbs. per cubic foot, and that of combustion gases containing 15 per cent carbonic acid, as approximately normal for downdraft kilns, would be 0.0805 lbs., it is clear that we cannot speak of "heavy carbonic acid gas blocking the way," especially not if these waste gases are of considerably higher temperature than the air and therefore of correspondingly lesser weight. With continuous kiln stacks, where the waste gases only contain from 3 per cent to 6 per cent carbonic acid and where their weight, therefore, is of a still more insignificant difference from that of air, Mr. Butler's contention would be even more at variance with the facts.

The pull or suction of a chimney depends on the difference in weight of the column of gases inside of the chimney and that of an equal column of air outside, the weight of the gases as well as the air depending on their respective temperatures. Before the fires in a kiln are started the chimney is filled with air at practically the same temperature as that of the outside air, and will therefore balance with the later. Before a good draft can be established, necessarily the chimney has to be warmed up first. If one depends on the waste gases to do this naturally, it takes a pretty long time. On that account it has been considered good practice since ages to kindle a live fire in the bottom of the stack on grates or without, in order to eliminate the unnecessary loss of time, and as in downdraft kilns to provide them with the required strong draft for watersmoking right from the start.

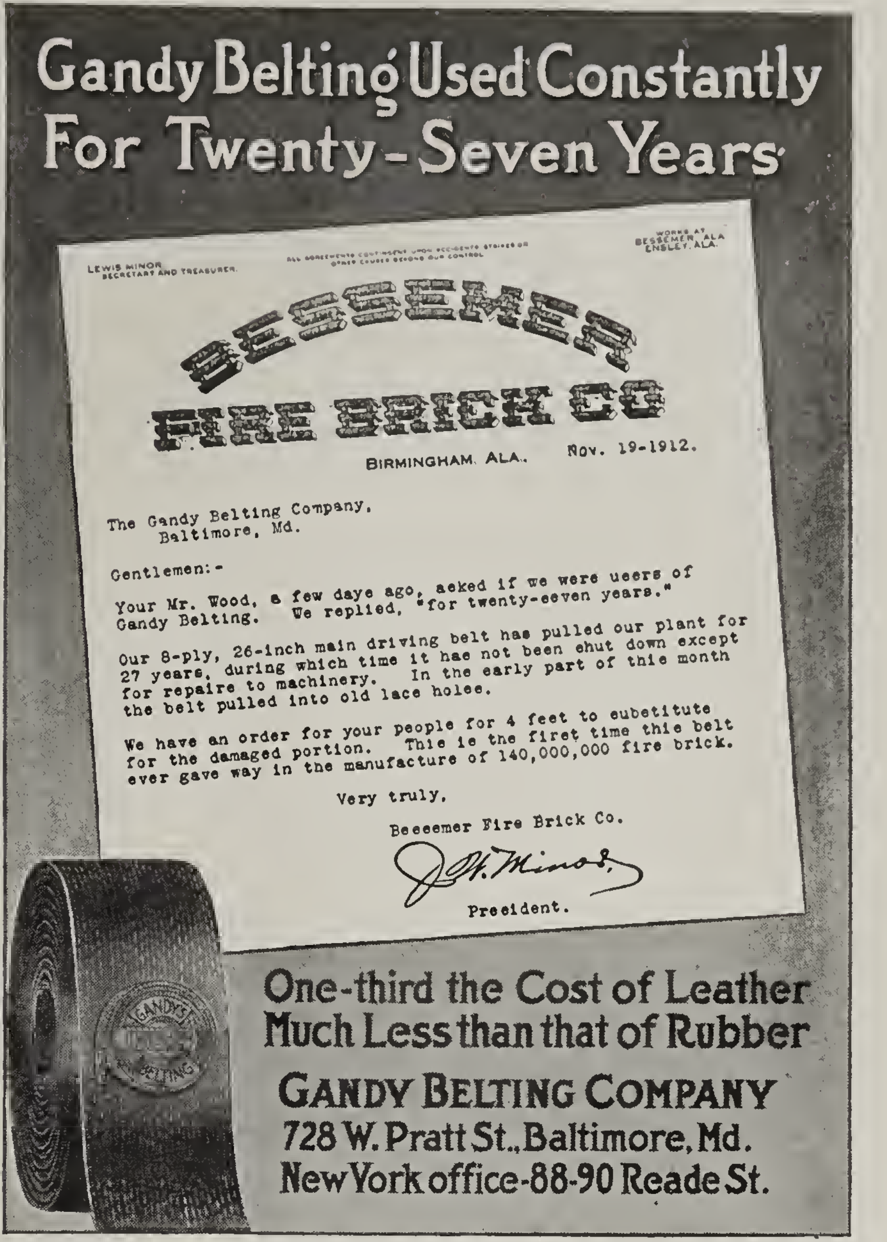
In the application of the pressure system in connection with a stack, the troubles incident to starting up are naturally overcome, as the positive pressure behind pushes the waste gases up the stack and drives the cold air out of the latter.

Mr. Butler's admonition to provide for adequate facilities for watersmoking with waste heat from the burned brick is a very timely one, and one that is followed altogether too little in this country. The preference is generally given to the cheaper kilns, consisting merely of the tunnel and the main draft flue. This results not only in a lesser capacity but also in a poorer grade of ware, making the investment, however low, a poor interest payer in the end.

Another Replies to Mr. Butler.

And still the mail continues to bring in letters from readers who, impressed with William A. Butler's recent contributions to this journal on the subject of continuous kilns, feel disposed to commend him for his suggestions and give their experience along similar lines. Here is a letter from Richard B. Hoehne, 5613 Central Ave., Cleveland, Ohio. Mr. Hoehne agrees with Mr. Butler on his unique method of increasing the daily capacity of a tunnel kiln by forcing the draft, but has his own ideas about some other matters. His letter follows:

"The Continuous Kiln—How to Increase Daily Capacity 100



Gandy Belting Used Constantly For Twenty-Seven Years

LEWIS MINOR SECRETARY AND TREASURER

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BIRMINGHAM, ALA. Nov. 19-1912.

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Gentlemen:-

Your Mr. Wood, a few days ago, asked if we were users of Gandy Belting. We replied, "for twenty-seven years."

Our 8-ply, 26-inch main driving belt has pulled our plant for 27 years, during which time it has not been shut down except for repairs to machinery. In the early part of this month the belt pulled into old lace holes.

We have an order for your people for 4 feet to substitute for the damaged portion. This is the first time this belt ever gave way in the manufacture of 140,000,000 fire brick.

Very truly,

Bessemer Fire Brick Co.

J. W. Minor

President.

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Per Cent." An article with this heading appeared in the November 4th issue of "Brick and Clay Record." Because of the vast importance of the subject, to which the author, Mr. Butler, took reference, I shall endeavor to introduce a system parallel to Butler's idea.

From Mr. Butler's article I got the impression that trouble resulting from insufficient length of the fire flue (fire flue is the series of chambers in which the ware is set) in a Hoffmann kiln was the motive for his invention. During my past years of practice with continuous kilns, I have frequently found some that were built too short, thus being the cause of all kinds of trouble. Excessive fuel consumption and slow advancement of the fire mostly figure in the front rank.

The only remedy we knew, heretofore, was adding sufficient chambers onto the kiln, so that a proper method of continuous operation could be established. In my opinion, Butler's blower in some cases may avoid the requirement of kiln extensions; provided this is the purpose of giving his views to the public, it deserves appreciation, and there are many that could take advantage of it.

A fire advancement of only 112 feet per week, upon which Mr. Butler bases his claim, must be a consequence of insufficient length of the fire flue. By no means would this be the limit in a Hoffmann kiln of proper design, unless a lacking of intelligence on the operator's side, or moisture in the kiln floor, are the cause.

In Germany many a Hoffmann kiln can be found with a fire speed far beyond 200 feet per week. There is ordinarily no trouble in advancing the fire; on the contrary, I have seen extensive experiments being conducted for the purpose of reducing the speed of the fire, without losing the "draft point" and the necessary fore-fire at the bottom. By slow advancement of the fire, it sometimes is quite difficult to retain, in the fore-fire region, the highest heat at the floor of the kiln; but it is very essential for a successful operation.

The speed of the fire may be easily increased by widening the spaces between the brick nearest the floor and by setting the brick tighter in the upper section. It is also of advantage to set all brick, as far as possible, nearly parallel to the axis of the fire flue. By observing these few hints conditions will always be of such character to allow adjustment of the draft and no trouble will arise in holding the "draft point" in its established position.

Regarding the proper length of a continuous kiln, will say, according to my experience, 26 to 29 times the width of the fire flue constitutes the right length for the latter. A kiln of such dimensions warrants the utmost economy and capacity. To provide a continuous kiln with heat ducts for watersmoking is a matter of great necessity, which no up-to-date engineer will neglect. With the increasing prices of fuel it will by and by become more popular in this country, thus avoiding the scumming in the kiln and materially reducing the expense of burning.

I fully indorse Mr. Butler's statement, viz.: "People who insist on burning the continuous kiln all 'down draft' had better 'stick' to down-draft kilns and leave the continuous kiln to someone else." I hope the continuous kiln folks around the Eastern states of the Union will take a lesson from these few words.

Mechanical devices have been adopted once in a while in replacing chimneys. Some types of kilns dictate the use of fans, but to no further extent do I favor the application of mechanical draft to continuous kilns. This is for the simple reason, it is subject to trouble. In fact, I fail to understand what kind of a mechanical arrangement Mr. Butler has reference to in saying it would have to be set and regulated only once to give uniform draft all the year around. For all I know, there is no machine which would run continually a whole year, neither can it retain uniformity in speed for such a length of time. The draft obtainable from a chimney is subject to the weather, but a chimney will always give draft. Its efficiency will never be interrupted by repairs; these, if any, are done during full operation.

I include to believe the chimneys Mr. Butler condemns are identical only with those usually seen in connection with brick kilns. People ordinarily think any old stack will make draft for a kiln. To suppress such an opinion most thoroughly it is advisable to follow his principle and recommend fans instead. An ideal chimney for a continuous kiln must be especially designed to fit the size, flue system and conditions of the kiln; only then will it be superior to mechanical draft devices of every description.

To overcome a "stoppage," as Mr. Butler calls it, which may occur when new chimneys are taken into operation, or after the stack has been out of operation for some time, I used to employ the following method—stuff a few bundles of dry straw into the base of the stack, ignite it and then watch the draft you will have two minutes later.

Sleeping Wealth in Boone County.

M. G. Quinn, of Columbia, Mo., one of our Middle West readers, is very enthusiastic over the fertile field he believes Boone County, Missouri, offers the clayworker seeking a place for investment. In a recent letter he says:

> There are ten thousand acres in a solid body close up to Columbia, lying on the waters of Hinkson Creek and its tributaries, bounded on the south by the State Highway and on the north by the Mexico Gravel road, that are as full of good coal and rich clays as an egg is of meat. If this coal, clay and lime stone field were developed and properly utilized the products would be worth more money on the commercial markets than all the grain and grass produced annually in Boone County. This is what we properly call "sleeping wealth," which only requires the touch of brains and bullion to develop and convert into coin. It consists of

rich coal, clay and lime stone fields which practically have never been touched.

Columbia is now spending more than a quarter of a million dollars annually importing coal and brick from Illinois and other points when she could be exporting instead of importing it, if we only had the courage to take hold of it and do it.

There is enough good vitrifying clay in this field to build a thousand cities like Columbia, a hundred like St. Louis, Chicago and Kansas City. There is enough lime stone rock if crushed and properly utilized, to metal every road and crossroad in Missouri, besides ballasting all of the railroads. In addition to this there is enough coal in this field to furnish cheap fuel to burn and vitrify these clays for a thousand years to come.

It is a conceded fact among the leading architects that the cheapest and best building material known to man is vitrified clay. It stands the ravages of time and all its elements. You may bury it in the earth or suspend it in the skies and it never corrodes or crumbles and is absolutely free and harmless from the effects of alkali, acid, or electricity. It is fire proof, frost proof, and water proof, and stands against storm and sunshine, wind and wave.

A building for business or residence purposes constructed of vitrified brick laid in cement mortar, with vitrified tile roofing and flooring and vitrified hollow tile for partition walls, is absolutely fireproof and you could not set it on fire if you were to try. They are now making the window and door sills and frames of vitrified clay and there is nothing in the building to burn unless it is household goods.

On account of the high price of the bricklayers' labor, it may cost a little more at first but this is more than offset by the difference in cost of maintenance.

It saves lathing and painting and it saves insurance.

The products of this coal and clay field are staples which the world cannot do without any more than they can do without sugar and coffee, meat, bread and clothing. Its development and use would furnish thousands of tons of freight to railroads, constant employment for thousands of laborers at good wages and profitable investment for capital. There are no substitutes for these staples and the demand is increasing with population and the supply is decreasing in the same ratio. Our towns and cities are growing very rapidly and our rural districts are improving with a better class of buildings and the "good roads" fever is spreading all over the country and the demand for these ceramic products and the coal to burn them is growing stronger and stronger every day.

All we have to do is to manufacture these products and keep the supply up with the demand at fair prices. Why not get money for a load of coal, brick or tile as well as for a load of corn, wheat or oats? There is no business which has a better promise or a brighter future than vitrified clay.

Brother Quinn certainly has painted the picture in bright colors and it is to be hoped that Boone County will not long be without a truly modern plant that will make use of these immense resources.

Boosts Brick at Picture Show.

The Salisbury Brick Company, of Salisbury, Md., is using slides in the moving picture shows to boost brick. The following letter and illustration are self-explanatory:

> At some little expense we have had a slide made for a moving picture machine which we think is a good advertisement for brick. You will remember that we wrote you about this some time ago. We have at last gotten it in shape and have the cuts and slide from it. We herewith enclose a proof of the cut. You might let us know if it would prove an effective advertisement for you as it is here in our small towns where we have picture shows.

USE BRICK: Your Building will be practically fireproof. Insurance will be less. House will be more substantial. You will be surprised at the small difference in cost between brick and frame. Do you know that the cost of painting the house for three years will pay the difference in cost between frame and brick. Investigate before you build

SALISBURY BRICK COMPANY

—See M·rchell

Undoubtedly our Maryland friends will advise us as to cost of these slides, and give us other information as to the expense attached to their display on the "movie" curtain.

In this connection it is well to add that the brickmaking industry seems to have neglected one of the strongest and most effective publicity "stunts" on record—that is, the use of moving picture films. Other arts and crafts are taking this up and have found it a splendid means of interesting and instructing the public in the use of the materials that enter into everyday use.

WRIGHT HOISTS
INCREASE PLANT CAPACITY

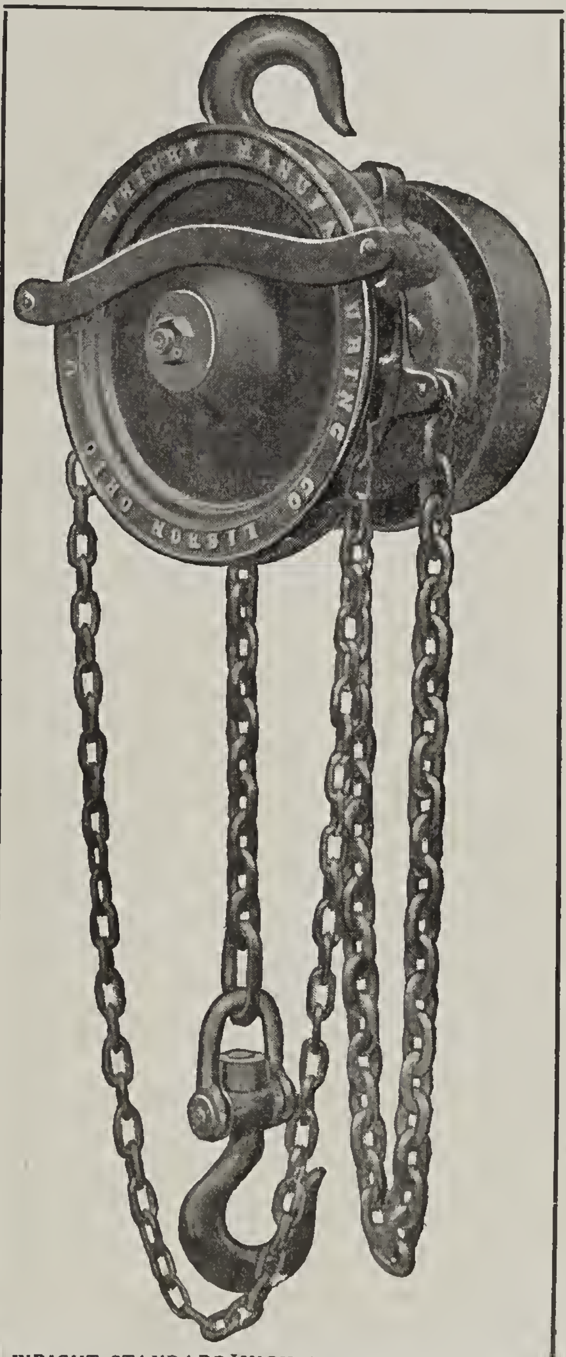
TIME LOST READJUSTING MACHINERY IS GONE FOREVER.

REDUCE THIS LOSS BY INSTALLING TIME - SAVING DEVICES AND

MINIMIZE THE SHUT DOWN

STEEL HOISTS NEVER BREAK

STEEL HOISTS NEVER BREAK



WRIGHT STANDARD HIGH SPEED STEEL HOIST

WRITE FOR INFORMATION ON HOISTS OF CAPACITIES VARYING FROM ONE-HALF TON TO TWENTY TONS.

WRIGHT MANUFACTURING COMPANY
LISBON - OHIO

"Pioneer Machinery is simply the best,
And used in clay Products, it stands Every test;
Durable, high-class, efficient and true,
It does for its users what others Can't Do.

PIONEER-MANUFRS.
CLAY MACHINERY
TRADE
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Lehigh Clay Product Co., Lehigh, Iowa.
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The Gladding-McBean Co., San Francisco, Cal.
The Pacific Clay Products Co., Los Angeles, Cal.
W. S. Dickey Clay Mfg. Co., Kansas City, Mo.
Texarkana Pipe Co., Texarkana, Tex.
San Antonio S. P. Co., San Antonio, Tex.
Henry Stevens Sons & Co., Macon, Ga.
Pomona Terra Cotta Co., Pomona, N. C.
Shawmut Clay Co., Shawmut, Pa.
Robinson Graves S. P. Co., Uhrichsville, O.
Dominion Sewer Pipe Co., Swansea, Ont., Can.
The Hamilton & Toronto Sewer Pipe Co., Toronto, Can.
British Columbia Clay Products Co., Vancouver, B. C.

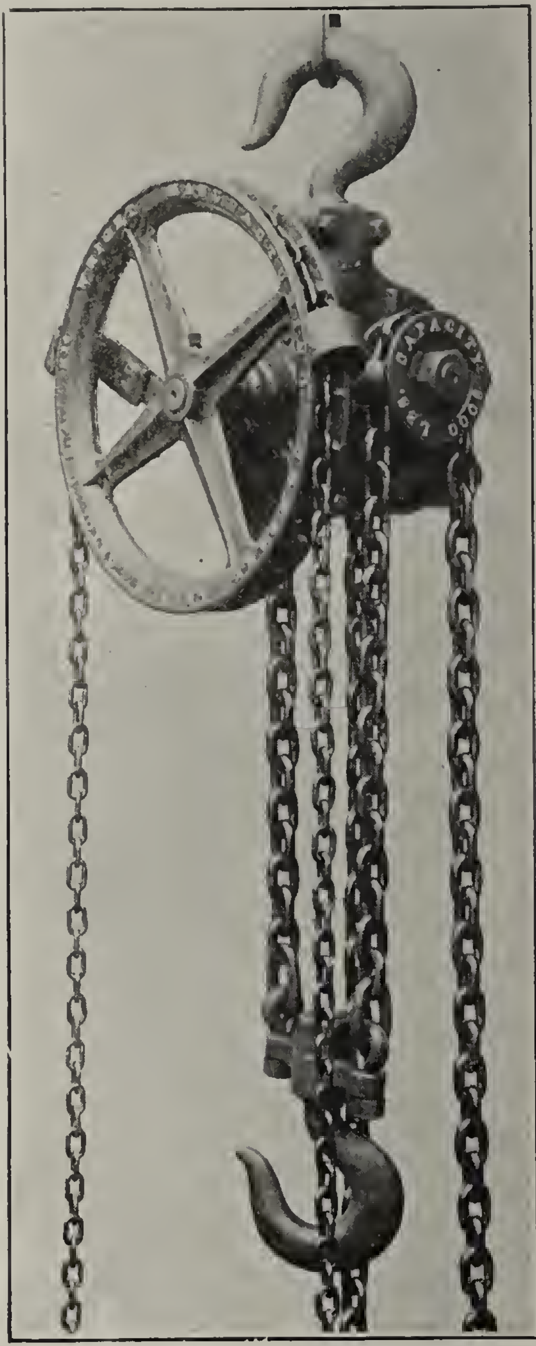
Send for Catalog No. 29

The-Taplin-Rice-Clerkin-Co.

The Clay Machinery Folks of the United States and Akron, O.

MACHINES AND EQUIPMENT.

During the past three years, various state legislatures have passed so-called employers' liability laws that have made the question of industrial accidents one of grave moment to every man engaged in the manufacturing field. Not only is the "fellow servant" and "employes' risk" being eliminated, but "contributory negligence" is fast becoming a weak defense for the employer who knows that an unforeseen accident to one or more of his men may wipe out the profits of an entire season. In the clayworking plant, where heavy machinery is the rule, the problem of protecting the men against their own carelessness is being given due consideration. The frequent changing of machine parts, the custom of using "handy men" instead of trained machinists, in the making of repairs, and the difficulty that plant owners experience in reaching men who are trained to the handling of machinery, has made the lifting of heavy loads a regular part of the men's work. The inevitable result has been a series of accidents that might have been prevented, had adequate means been provided for the mechanical handling of these heavy machine parts. For this work, the steel hoist is the only sensible device. Light in itself, it can be placed over the machine part that has to be lifted or replaced. Its action is absolute. The load is held in any position automatically and will remain there until released by a slight pull of the hand chain. It is always under the operator's complete control. An idea of its power can be gained, when it is shown that the one-ton hoist will lift its full load one foot by overhauling 30 feet of chain and a pull of 80 pounds. The larger sizes—3, 4 and 5 tons capacities, only require from 105 to 125 lb. hand chain pull to lift full load.



THE SCHAFFER CONTINUOUS KILN.

The new Schaffer Semi-Continuous Kiln system, recently announced in the advertising section of "Brick and Clay Record," has brought a number of inquiries from readers who ask as to its merits. This system, while only on the market a short while, is meeting with much favor and those who have installed it are loud in their praise. Its chief claim for merit is way of saving the ware and increasing its quality.

This system, according to its inventor, John C. Schaffer, consists of an overhead duct and an underground tunnel with which the regular periodical kiln is connected up in such a manner as to give the same fuel-saving as the regular continuous kiln. The underground tunnel is practically the same as would be built to carry the gases from the bottom of the kiln to the stack, but instead is carried under the next kiln in line and connects to the bottom of this kiln; also each succeeding kiln, with a damper placed between each one. The overhead duct is connected to each kiln through an opening in the crown with a damper at each opening.

The hot gases which escape ordinarily through the stack are carried to No. 2 kiln, entering at the bottom. It is deflected so as to distribute evenly among the ware. It then takes an upward course, the gases are passed off through an opening in center of crown into the overhead duct, which connects to either stack or fan. When the kiln is being fired, the damper in the crown is closed and the damper in underground tunnel between this kiln and No. 2 is opened and damper between No. 2 and No. 3 kilns is closed. As soon as No. 3 kiln is closed ready for heat, the overhead damper is partly opened. Also the damper between No. 2 and No. 3 kilns, and the damper between No. 3 and No. 4 kilns is closed. As soon as No. 1 kiln is finished, fires are started in the No. 2 kiln, which has been receiving heat from No. 1 kiln and transfers ahead are made in the same order.

With the periodical kiln it is a common occurence for the temperature in stack to reach a point near the temperature in kiln. The waste heat by this system is obviously utilized.

Owing to the heat first entering at the bottom of the kiln, the water smoke is carried up through the ware instead of down. The advantage of this is that it will meet with less resistance. The bottom brick will not become softened by moisture condensing on them from the water smoking and causing the kiln marking and warping of the brick. The kiln will be raised to 1,200 to 1,500 degrees, and will have a higher temperature at the bottom of kiln than at top, and when fires are started in kiln it will not be necessary to form pressure at top of kiln sufficient to force heat down through damp green ware, and damp flues to stack. Instead the heat will readily be distributed and an even temperature maintained throughout the kiln, which will result in producing practically all No. 1 ware in much less time, and with a saving of 50 per cent in fuel.

When two rows of kilns are installed, with 12 to 14 kilns in a battery, firing is carried on at two points, which will equal the firing of six individual kilns.

The Schaffer Kiln is advertised on another page, the ad. carrying an outline drawing of the system which, with the description given above, will give one a pretty fair idea of the system.

The Schaffer Poidometer is another one of the Schaffer or "Seeco" systems that is meeting with favor. This machine is designed to weigh and regulate the flow of materials traveling in a continuous stream over a conveyor. It can be attached to a hopper, bin or elevator spout and delivers the material in any predetermined quantity at an even and regular flow, and records the amount handled, regardless of changes in specific gravity, amount of moisture or sizes of material.

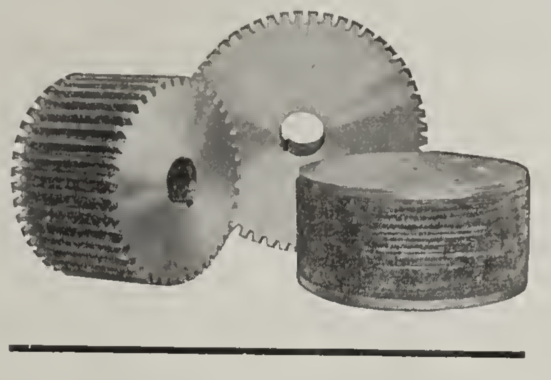
The Darlington Clay Products Co., of Pittsburgh, recently bought two of these machines to be used in obtaining the correct proportion of manganese, as well as regulating the delivery to the pug mill, and will eliminate the services of a man at this point, insuring even tempering of the clay at the same time.

The Schaffer Engineering & Equipment Co. is located at Tiffin, Ill., and do a general engineering and equipment business. Their business, while primarily is for the designing of clay plants and supply them with proper equipment, is not confined to this alone, as the following clipping from a Tiffin paper indicates:

"The Schaffer Engineering & Equipment Co., of this city, has been awarded the contract for the drawings, specifications and supervision, of the new $12,000 school building to be erected at Republic. The building is to be of brick, faced with vitrified brick and will be heated by the hot air system. It is the intention to make this structure one of the best school buildings in this locality."

MOVING CARS WITH A PULLEY.

The handling of cars on the siding is frequently a serious problem involving an unnecessary expenditure of time and temper. Only where the number of cars to be handled about a plant is sufficiently large to warrant the use of a small locomotive is the problem comparatively simple; or again, the occasional mov-



Nuttall Rawhide Gears

We have all sizes of patterns to meet your special requirements.

The Rawhide is selected stock. The flanges are without seam or blowhole defects. The workmanship the usual high Nuttall standard, and the price and delivery right.

NUTTALL
Pittsburgh

Largest Gear Works in the World

Machine and Hand Brick Moulds

of Every Description

Write for Detailed Description and Prices

The G. B. Mentz Co.

America's Foremost Mould Makers

Wallkill, N. Y.

ing of a single car may be taken care of with one of the several very good hand levers or "car movers" that are on the market.

Between the very few and the great many cars, however, there is a gap which can only be filled by means of a power car puller similar to that recently put on the market by the Stephens-Adamson Mfg. Co., and known as Model No. 999. This machine consists essentially of a cast iron housing, within which is a reducing gear mechanism connecting the driving pulley to the capstan. The heavy iron case serves a three-fold purpose, acting as the supporting frame, gear guard and also as part of the planetary gear train. On this account it was possible to design a very compact machine and at the same time sufficiently rugged and powerful to meet all requirements of this service.

In operation, a Manila rope may be given a couple of wraps about the capstan and the friction created by pulling on the free end of the rope is sufficient to move several loaded cars on a level track at a speed of about 80 feet per minute. The car puller may be located in any convenient place beside the track without danger of exposed gears. By using guide rolls and pulley blocks, it can serve a considerable length of straight or curved track hauling cars in either direction.

This car puller may be belted to a line shaft or motor, although where the current is available an electric motor, direct geared to the car puller, makes the most convenient arrangement. The car puller is furnished by the manufacturers, when desired, mounted upon a steel base geared to any standard motor.

The type of car puller shown in accompanying illustrations is one of the recent developments of the Stephens-Adamson Company. It is made as small and compact as is possible for such a powerfully built machine and it has been developed to meet the demand for a small, inexpensive power machine capable of handling from one to three loaded cars. The capstan is driven from the pulley by means of planetary gears. The heavy cast iron case serves as a guard for the gears and also is provided with internal gear teeth which form part of the planetary gear train. The slow moving capstan and the pulley are the only exposed moving parts. Power may be taken from a line shaft or motor. This car puller may be located in any convenient place beside the track without danger of exposed gears. An individual motor may be used or it may be belted to a line shaft through a clutch pulley. By using pulley blocks and guide rolls, one machine can serve a considerable length of track for hauling cars in either direction.

The Mesta Company, of Pittsburgh, Pa., has issued a new descriptive book of its Mesta engine. Pictures of a number of installations are shown and the bulletin is not only interesting but instructive.

The Schaffer Engineering and Equipment Company, of Tiffin, Ohio, are interested in receiving literature from machinery concerns, especially manufacturers of clayworking machinery, transmission and power.

R. A. Caird, formerly with the Alta Belting Company, has been retained by the National Belting Company, of Elyria, Ohio, to look after the "Black Devil" belting, a line that the latter company took over, when it absorbed the Alta Belting Company's stock, interest and good will.

The Grateless Furnace Company is equipping trial kilns with the Grateless Gravity Feed Firebox for the Barr Clay Company, Streator, Ill.; American Refractories Company, Joliet, Ill., and the Universal Sanitary Manufacturing Company at New Castle, Pa. The Barr Clay Company manufactures paving block, face brick and common brick. The American Refractories Company makes silica and chrome brick, both of which require higher heats than any other clay products ware. The Universal Sanitary Manufacturing Company manufactures stoneware for toilets, washstands and bath tubs.

The word "Keystone" as applied to greases and lubricating oils, belongs to Augustus C. Buzby, doing business as the Keystone Lubricating Co., because of his introduction of his product under that name in 1885. This is the decision of the United States District Court for the Northern District of Illinois. The suit in which the validity of this trade-mark was established was fought between the Keystone Lubricating Co., of Philadelphia, Pa., and the Keystone Oil & Manufacturing Co., of Chicago. It was the complaint of the former that the Chicago concern had incorporated in 1900 under the name "Keystone" with the deliberate intention of committing frauds upon the trade, and the court ordered that the Chicago concern should incorporate its lubricating grease business under some other name, or adopt some other plan to avoid infringement.

George C. Vidctto, secretary of the American Pulverizer Company of East St. Louis, Ill., has been spending a month in the Eastern territory booking new business, and looking after the installation of a number of new pulverizing machines in clay working plants. When he reached Pittsburgh, Pa., on his way home, he received a batch of business mail from the home office which caused him to retrace his steps and again "hike" back to the far Eastern districts. "I don't know when I'll be able to get cleared away for home," he said to the representative of "Brick and Clay Record" when seen in the Fort Pitt Hotel at Pittsburgh.

He Sells Sunshine as Well as Pyrometers and Recorders.

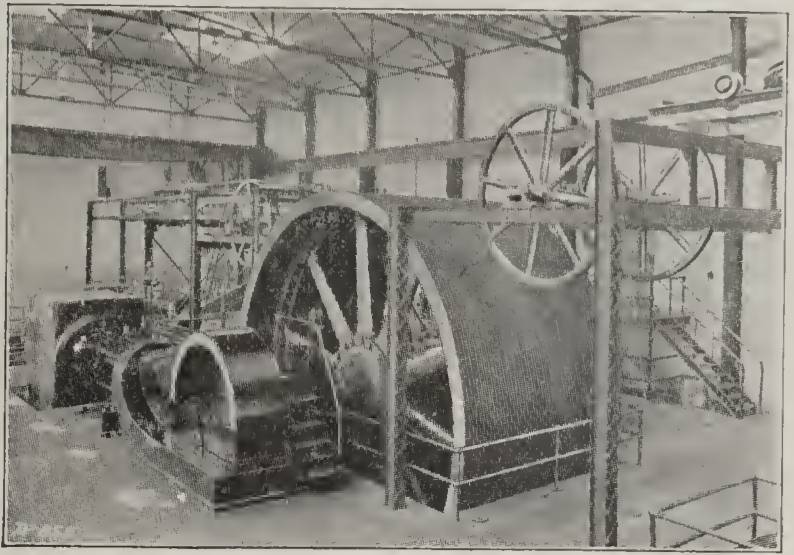
Once in awhile you run across an exceptional sort of fellow. W. H. Gibb, the general sales manager of the Stupakoff Laboratories of Pittsburgh, Pa., is declared by his acquaintances to be one of this class. He gets this distinction, so his friends affirm, simply because of his pleasing personality. Besides selling pyrometers, indicators, recorders and all sorts of temperature instruments to the clayworkers, Mr. Gibb disposes of a large consignment of sunshine and good will wherever he goes, and seems never to "run out of stock." Those who have been regular attendants at the national conventions of recent years will recall his cheerful smile, for he is a convention bug of the first water. He only lately became sales manager of the Stupakoff laboratories, and this fact furnishes the excuse for bringing him into the limelight in this manner. The Stupakoff instruments have long been identified with the steel industry, where they are recognized for their superior worth. Mr. Gibb's wide acquaintance with the clay product field undoubtedly will make the name of Stupakoff equally as familiar to the clay plant owners. The Stupakoff instrument is in use at the Purington Paving Brick Co.'s plant, Galesburg, Ill., and this concern is so well pleased it is arranging to install them on the entire battery of kilns—56 in number.

W. H. GIBBS.

After You Have Read This Magazine

Why not pass it around —letting one employe read it today and another tomorrow? The more your men know, the better workmen they are.

DODGE



A Dodge Rope Drive Job, Designed and Installed By Dodge Engineers

Most Power for the Least Money

DODGE rope drives are operating successfully in many clay working plants, transmitting power economically under all sorts of conditions. Some of them have solved difficult transmission problems and represent important engineering achievements. There are Dodge drives working between centers as distant as 700 feet, and between centers as short as 10 feet—indoors and outdoors.

Rope drives properly designed possess the flexibility and elasticity required for main drives where the load is fluctuating; for driving at angles; and over or around obstacles, and they are positive in transmission, free from electrical disturbance and low in first cost and in maintenance expense.

Our experiences of 28 years and more have been compiled in book form. They make interesting reading for managers, superintendents, master mechanics and chief engineers in the clayworking industry. We will be glad to send the book free for the asking. A request today brings the book tomorrow.

Dodge Manufacturing Company
Everything for the Mechanical and Economical Transmission of Power
Mishawaka, Indiana

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New York, 21 Murray St.
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TRADE MARK

Makers of Goodrich Tires and Everything That's Best in Rubber

BRICK MACHINERY MEN WIN ELECTION.

Make Fight on Building Street Out of Permanent Vitrified Block and Elect Candidates.

In the Nov. 18 issue of this journal a letter from H. H. Fate, president of the J. D. Fate Company, manufacturers of clayworking machinery at Plymouth, Ohio, told of a local municipal election in which himself and other members of the firm were taking a hand. Mr. Fate explained that certain interests had decided to force a concrete street on property owners on one of the resident streets although these property owners had voted for vitirified paving block.

H. R. SYKES.

The letter further said the writer was interested in the article on the Wayne County concrete roads which appeared in a recent issue of this journal and asked for copies of the same so that they might be distributed.

A hot campaign was waged and we are glad to report that Mr. Fate and his friends won easily, some of the candidates winning by a four-to-one vote. One of the victorious candidates was H. R. Sykes of the J. D. Fate Company, Mr. Sykes being elected as one of the councilmen. It is safe to say that Plymouth will have vitrified paving block.

Favorable Location for a Plant.

The great activity in building on the Belle Fourche project, South Dakota, coupled with the high prices for lumber, emphasizes the need for other building materials. There is an exceptional opening here for a first-class brick making plant and the promoter of this enterprise may count upon the hearty support and assistance of the commercial interests in the valley. This information is given by the Reclamation Service, Department of the Interior, Washington, D. C., which states that in the immediate neighborhood is an inexhaustible amount of shale and that a coal mine is only a few miles distant. This project contains 100,000 acres of fine irrigable land, has numerous growing towns, and is a short distance from the cities of Lead and Deadwood in the heart of the richest gold mining region of the Northwest. The Reclamation Service which is promoting the settlement of the Government land will send full information concerning the valley upon application.

ROAD CONGRESS MEETS DEC. 10.

December is a popular convention month and it would seem as though any clayworker could stay at home, and still attend some convention or other. At any rate, there will be some meeting, in which he is, or should be interested, held during the month at a short distance from where he lives or works, or has his being.

The tenth annual convention of the American Road Builders' Association and the fifth annual Goods Roads Exhibition will be held at Philadelphia, Pa., December 9, 10, 11 and 12. The place of meeting will be the First Regiment Armory in that city, and arrangements have been made with the various excellent hotels in the Quaker city, to accommodate the crowd. Prominent engineers and road builders from all parts of the country will be in attendance.

Paving brick manufacturers owe it to themselves to be very much "among those present" and so prevent the usual preponderance of the cement manufacture at meetings of this kind.

BRICK HOLDS ITS OWN IN CHICAGO STREETS.

There were 384,783 more yards of paving in Chicago ordered in October of this year than for the same month last year, and vitrified paving block stood second in the list, with 764,804 against 632,188 yards last year. Asphalt leads with 1,062,313 yards against 768,650 yards in 1912. Contrary to general belief Chicago is putting in almost as much brick proportionately to its size as any other city. The figures for October taken from the Board of Local Improvements records follow:

Ordered at Public Hearing but not Filed in Court: Asphalt, 616,808; Brick, 489,924; Asphalt Macadam, 219,362; Creosote Block, 80,460; Granite, 74,787; Concrete, 10,838; total, 1,695,497 yards.

Pending in Court and Confirmed: Asphalt, 445,505; Brick, 274,880; Asphalt Macadam, 206,035; Asphalt Concrete, 121,915; Creosote Block, 46,997; Granite, 22,548; total, 1,117,880.

The total yards for the month with a comparison with the totals of last year follow: Asphalt, 1,062,313 against 768,650 last year; Brick, 764,804 against 632,188 last year; Asphalt Macadam, 409,353 against 290,660 last year; Asphalt Concrete, 341,277 against 380,381 last year; Creosote Block, 127,457 against 310,193 last year; Granite, 97,335 against 46,030 last year; Concrete, 10,838 against 492 last year. Excess total paving in October over 1912, 384,783 yards.

The Paving Brick Publicity Bureau, which has charge of the promotion end of the paving brick interests, while unostentatious in its methods, is doing a valuable service for the manufacturers in making vitrified paving brick popular.

SCUMMING.

If scum appears on your clay before it is made up sulphate is in the material, and there is where you must look for the solution, says Ellis Lovejoy in his book on "Scumming and Efflorescence."* If it appears on the ware during the drying you may look there for the cause and remove it as the clay or water is to blame. If waste heat drying with sulphur gases alone produces the scum in drying we may conclude the clay contains only the basic element of the scum, and not the acid element in active form. If the dried product is clean and the scum appears only in the burning we may say that the clay contains little or no sulphate, and that the water is free from sulphur, but that the clay contains lime and perhaps pyrite. If the water-smoking is done with wood and no scum appears, we are certain the sulphur end of the trouble is not from the clay or the water, but comes from the products of combustion. Finally if the scum is confined largely to the draft spaces in the kiln, and occurs intermittently with wet fuel, or in damp kilns, or during wet weather, we may consider the trouble is connected with the burning and that the clay is safe.

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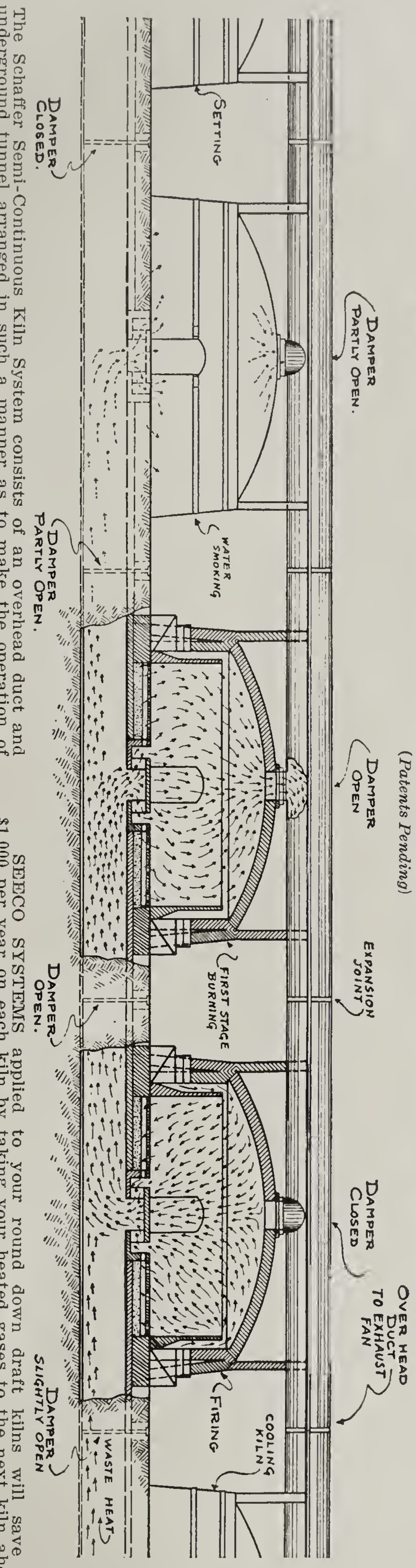
*"Scumming and Efflorescence," by Ellis Lovejoy, "Brick and Clay Record," Chicago. Postpaid 50 cents.

THE SCHAFFER SEMI-CONTINUOUS KILN SYSTEM

(*Patents Pending*)



The Schaffer Semi-Continuous Kiln System consists of an overhead duct and an underground tunnel arranged in such a manner as to make the operation of the round down draft kilns continuous.

It gives the same fuel saving as the regular continuous kiln, but is much more simple to operate.

It produces a much higher class ware than is produced in either the continuous or periodic kilns.

SEECO SYSTEMS applied to your round down draft kilns will save you $1,000 per year on each kiln by taking your heated gases to the next kiln ahead, instead of out to the stack.

This is only one point of advantage.

There are many others, if you will ask us to explain.

Seeco Systems Secure Success in Old Plants as well as new.

THE SCHAFFER ENGINEERING & EQUIPMENT CO. (Incorporated), TIFFIN, OHIO

Flexible-edge Leviathan conveyor belt, 68 ft. by 18 in., 5-ply, in use several years.

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that "makes good"

YOU'RE absolutely right! It isn't so much what a belt **is**, but what it **has done** for others in your line of work, and how closely the maker stands behind his belt 'til it **does** "make good." This is the plan that sells Leviathan and Anaconda Belting.

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Write our nearest house for all the facts.

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(See Cutters.)

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Brick Machines (Soft Mud.)
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Wallace Mfg. Co

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Nelsonville Brick Co.
Purington Paving Bk. Co.
Southern Clay Mfg. Co.
Sterling Bk. Co.
United Brick Co.

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Dodge Mfg. Co.

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Broderick & Bascom Rope Co.

Cars, Trucks and Turntables.
American Clay Machy. Co.
Atlas Car & Mfg. Co.
Berg Machy. Mfg. Co., Ltd.
Bonnot Co.
Chase Fdy. & Mfg. Co.
Electric Locomotive & Car Co.
Fate Co., J. D.
Gerlock, H. W.
Martin Brick Mach. Mfg. Co.
Ohio Ceramic Engineering Co.
Raymond Co., C. W.
Weller Mfg. Co.

Cars (Clay).
American Clay Machy. Co.
Atlas Car & Mfg. Co.
Berg Machy. Mfg. Co., Ltd.
Brewer & Co., H.
Chambers Bros. Co.
Chase Fdry. & Mfg. Co.
Electric Locomotive & Car Co.
Fate Co., J. D.
Gerlock, H. W.
Manufacturers Equipment Co.
Ohio Ceramic Eng. Co.
Taplin, Rice-Clerkin Co.
Weller Mfg. Co.

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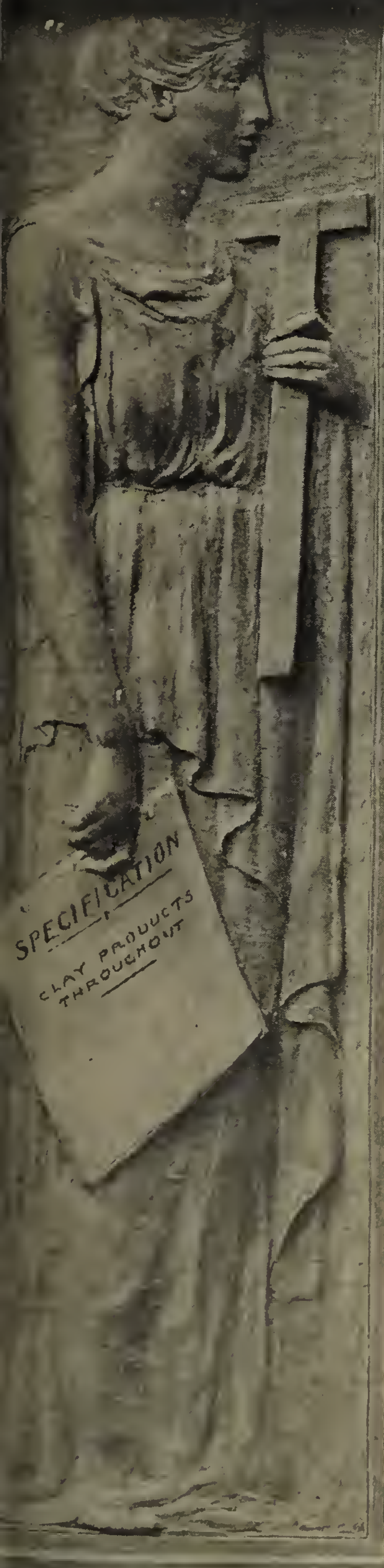
IN THIS NUMBER: FULL REPORTS OF CONVENTIONS AT FRENCH LICK and DES MOINES

BRICK and CLAY RECORD



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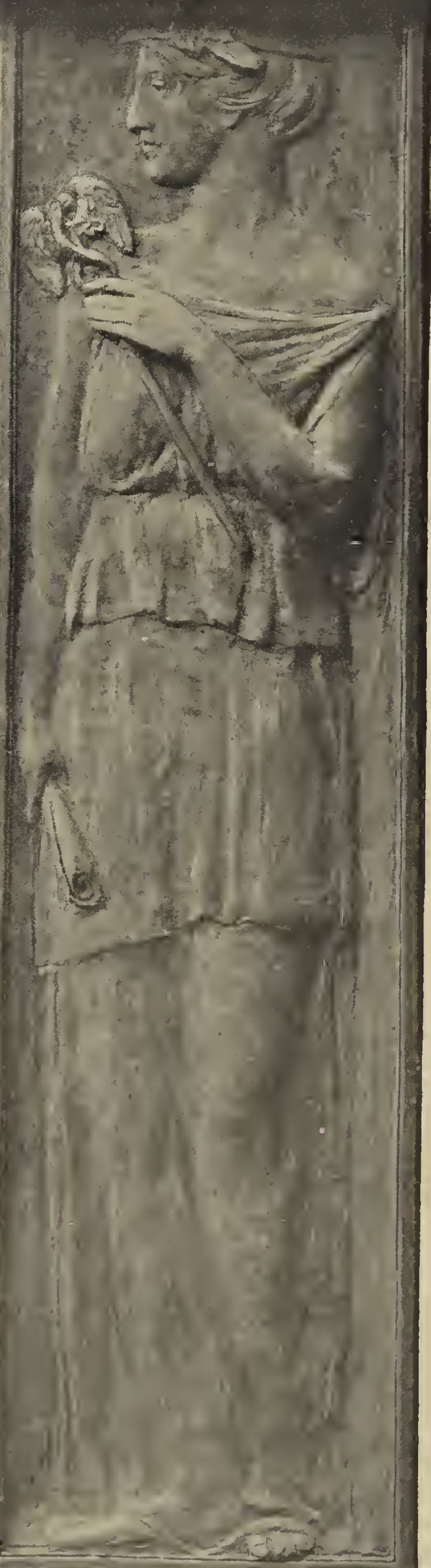
JOSEPH W. MOULDING
President American Face Brick Association 1914



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CHICAGO, DECEMBER 16, 1913

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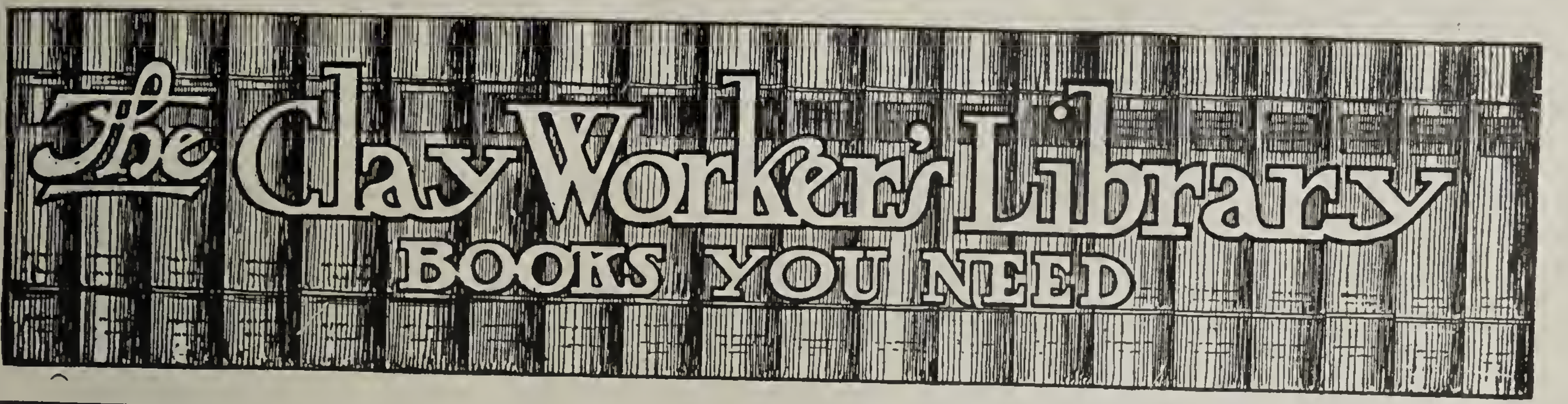

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BOOKS YOU NEED

Every clayworker desires to do his best. To do one's best, a man must bring to the aid of his OWN knowledge and experience, the knowledge and experience of others. The best practice, the best knowledge, the "know-how" of experience are condensed in these volumes. It will pay you to add some of them to your library.

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¶ You would also find the books "A House of Brick of Moderate Cost" (.50), and "A House of Brick for $10,000" (.25) of value to you.

BRICK AND CLAY RECORD, 445 Plymouth Court, CHICAGO

The Editor's Corner

A Department Wherein is Set Apart Comment
and Opinions on Some of the Graver Problems
Confronting the Clayworker and Co-Laborers

THIS is the season of the annual conventions. Clayworkers all over the Nation are meeting in these gatherings at some central point and many thousands of dollars will be spent in railroad fares, in hotel accommodations, in entertainment and in the many items that are necessary to make a convention possible.

WHY is the convention? For WHAT PURPOSES are these annual meetings held? For WHAT REASON do the clayworkers attend them?

A convention—in the usage of the term today, is a gathering of a people for a discussion of certain problems that are of vital interest to that people as a whole.

These annual meetings are held, therefore, to give an OPPORTUNITY for men to PROPOUND THE PROBLEMS that confront them and to seek the HELP of their fellow men in finding a SOLUTION.

Clayworkers attend them for several reasons.

One class welcomes the convention because it is a good EXCUSE to get away from home and enjoy a little recreation and pleasure as a sort of relexation from the labors of the year closed.

Another class combines this idea with a desire to make the trip PROFITABLE.

Still another class goes simply for the purpose of PROFIT—to learn something from their fellow men—to obtain the united help of other clayworkers in solving problems that are of deep value to everyone.

There is another class that goes just to LISTEN and NOT be heard. They realize the GOOD these gatherings do and they want to BENEFIT by them, but they are content with accepting WITHOUT giving.

Last, but not least in numbers, is the clayworker who can give NO EARTHLY REASON why he is there and who neither learns nor teaches.

It is well to enjoy one's self. "All work and no play, makes Jack a dull boy," you know. The clayworker who goes to the conventions with the idea of combining both pleasure and profit is going to return home ahead of the game.

The man, however, who plans on the meeting as an excuse for having a good time and who never goes NEAR the convention hall is going to MISS something and will be the first fellow to complain at the end of the next season that "Business is poor."

And the man who goes to a convention and sits listlessly by is almost as bad a cuss as the other fellow who does not go at all.

Conventions are nothing more than symposiums conducted for the EXCHANGE of ideas. It is necessary to have some semblance of order—a prearranged program, otherwise sessions would drag, but you have just as much right to the floor at any and all times as any of the "set" speakers.

The clayworker who finds profit in a convention is the man who goes with the DETERMINATION of ABSORBING every good idea he hears. He takes his note book and he enters therein every item that comes to his attention. He does not trust to his memory.

He enters into the DISCUSSIONS. If he finds that some speaker has made a misstatement of facts or conditions he takes the occasion to so remind him. If he finds that he has a method of doing a certain thing that will AID or HELP someone else he rises and TELLS the other clayworkers of his practice.

Take ALL you can GET and GIVE all you CAN.

Do not be a nonentity.

The most insignificant clayworker—measuring him by output, oftentimes can give the big fellow a few new wrinkles.

Attend your conventions—your state and your national meetings. Go with the spirit of play in your heart, but leave a LITTLE room for SERIOUS thought and direct that thought towards the convention hall where for a few hours each day you can ABSORB KNOWLEDGE and go forth the remaining hours of the day sight-seeing or pleasure-hunting with the satisfaction of knowing that you have GAINED enough to pay for the good time you expect to have.

DO not be idle this Winter just because Frost has closed your doors and stopped your machines. There is much to be done. Neglected machinery can be adjusted or repaired. Improvements can be made in your methods of manufacture. There are many short-cuts that can be worked out these long Winter evenings.

Probably a simple storage system for your clay would add three or four months to your year of clayworking. Why not try to solve that problem? You are losing money every hour your plant remains idle. Machinery to be profitable must be used. UNUSED machinery EATS into PROFITS.

Then, there are your buildings. Are they all that is to be desired? Isn't that old frame shack an eyesore to you—or have you become so accustomed to looking at it you cease to worry over it?

Your customer and your prospective customer, however, does not look at it this way.

He is wondering why you do not use some of your own medicine.

Why not tear down the shack. Why not erect a modern structure of your OWN material—the material that you RECOMMEND to others?

It will SAFE-GUARD against fire for you and besides return a PROFIT on the investment by being a practical example of fireproofing construction.

Clean up your yards.

Rehabilitate your business office so that when a customer enters he will FEEL he is in a BUSINESS office.

Order some nicely printed stationery.

Buy a typewriter, if you have none, and either learn how to operate it or let your office man learn it.

Work out a local newspaper campaign and start in NOW to educate your fellow townsmen to the advantages of burned clay so that when the Spring building season opens you will be the first man he will think of.

There is lots to do this Winter. Do not loaf. Idle hands do not make bread and butter. Neither do they make profits.

* * *

THERE will come a day in the clayworking industries when every plant will maintain a chemical laboratory and testing room wherein problems of the plant will be worked out and a high grade quality of products will be made possible. Much is wasted each year—probably a greater per cent than the average plant will admit, and all because there is no DEFINITE system of keeping tab on the raw material and the product in its various stages of manufacture.

A certain firm of brick manufacturers making a face brick recently found, by the merest accident, that in addition to the "slips" that were made by the cutting table that an average one brick in every twenty was thrown away in the making and drying because of defects easily noticeable either at the end of the drying or before.

A further lot of ten brick in each one hundred had to be sold as common brick or thrown on the "dump" because of defects not observed before the burning.

And, yet, practically all these brick could have been saved had there been some definite, scientific tests that would have determined the trouble.

The Germans may make brick slower and may not have plants of such great output as the Americans but they maintain quality and they manufacture brick at a profit because even the smallest of plants feel that a testing room is an integral part of the concern.

These departments receive all the defective goods and report on the best means of correcting the trouble. They keep a constant check on the various raw materials and warn the superintendent of any variation and suggest what must be done to keep the product of the plant up to the uniform quality.

The great Chicago packing houses—Armour, Swift and the others long have followed this practice and the testing and experimental room is looked upon as the most profitable producing department in these institutions.

The steel mills maintain testing rooms and the by-products that these departments discover bring back returns that are immeasurable.

The clayworker can do the same thing. Some of these do have testing laboratories, but the practice is not general in this country.

To maintain quality and diminish price requires constant watching on each of the operations through which the material passes.

Elbert Hubbard Says: "The Man Who Knew It All Is Dead"

ADDING THAT HE SUCCUMBED TO "GOITRE OF THE EGO." THUS REFRESHINGLY DOES THE SAGE OF EAST AURORA REMIND US THAT WHEN WE CEASE TO LEARN WE CEASE TO LIVE ∴ ∴ ∴ ∴ ∴ ∴ ∴ ∴ ∴

WE LIVE right-up-to-the-minute, and even borrow of tomorrow" says Mr. Hubbard. "In the year we are just entering, we are formulating plans, arranging campaigns, adopting new methods and procedure." He sounds the keynote of progressive thought and administers sharp medicine to the Clayworker who believes he can cope with modern competition by standing still.

THE heir-apparent to the British throne has for his crest, three ostrich plumes. And on an intertwining scroll is the motto, "Ich Dien." Which being interpreted means, "I serve."

The heir-apparent to the American sovereign has for his coat-of-arms, three base ball bats, rampant, on a field of emerald. And underneath are the words, "Ischi Beble"—"I should worry!"

Both sentiments express two vital principles; work and play, service and recreation.

And this combination, broadly speaking, meet life's contingencies, and is full of possibilities.

Anything that contributes to healthier bodies, purer thoughts, better work and service, is desirable; and we purpose to show how the Trade Paper performs that function.

That only is sacred which serves.

We live in the Age of the progressives—though it may include Republicans, Democrats, Prohibitionists and Socialists and what not.

Every day thousands of dollars worth of machinery is junked to make way for up-to-date equipment.

We live right-up-to-the-minute, and even borrow of tomorrow.

And the Trade Paper mirrors the mind of the progressive thinker, and breathes the spirit of the Age.

Its pages are full of instruction and information, the result of specialized knowledge and research.

The editorial department of the Trade Paper is in the hands of experts, who have their fingers upon the pulse of human thought and activity.

Its pages are full of facts—facts that bring home truths—facts that expose falsehood—facts that spell success.

There is a vim, verve and vitality in the Trade Paper that is peculiarly its own.

There is a sympathy and understanding permeating it, that is unique, an intimacy that makes it a personal friend.

Right here is where the Trade Paper has its source of power. It gathers together, informs and reflects the things which may be applied to specific, individual need.

As a means of encouragement and inspiration, the Trade Paper is invaluable. The subscriber who reads it, and chews and digests its varied menu, will become stronger and more robust. Both he and his business will benefit.

The policy of the Trade Paper is founded upon scientific knowledge and common sense, and its business conducted on the ethical principles of morality.

It is accurate and reliable, honest and straightforward.

The Trade Paper does not deal in superficialities. It does not merely scratch the surface, it digs deep down into the heart of the things. It is intensely practical, and has quality, tone and depth.

There is a vitality of thought running through its pages, which comes from the dynamo of truth. And it is illumined by a steady, clear flame of utility and service.

Perhaps the great charm of the Trade Paper lies in the fact that its articles are brief, bright and brotherly.

It is tedious to have to wade through columns of words—just words.

"O, monstrous!" cried the fat Knight, "but one half-pennyworth of bread to this intolerable deal of sack!"

The greatness of a thing is not only in what it has done, nor even in what it is doing, but in its possibilities.

It must have survival value. And survival value is prescience justified.

Possibilities presume future contingencies, and future contingencies impel thought, plans and construction.

In the year we are now entering we are formulating plans, arranging campaigns, adopting new methods and procedure.

If these plans are sound, workable, efficient, we shall make progress. If they are undeveloped, "half made up," we are on the "bumptedybump," and the Receiver is waiting around the corner with a stuffed club.

The man who knew it all is dead. He succumbed to goitre of the ego.

We occasionally run across a few stray examples of people who are afflicted with fatty degeneration of the Sarah Bellum, but for the most part we are co-operators.

"Two heads are better than one—if they *are* only sheep-heads," said the woman as she dropped them into the kettle.

In a multitude of counsel there is much wisdom. When a man gets wise to himself, he gets wise to the fact that only as he co-operates can he succeed.

The Trade Paper is essentially the apostle of co-operation.

It is a forum, a senate, a school and a business institution.

The possibilities of the Trade Paper are only limited by the ability of the editorial department, the sound business pilot at the helm, and the receptivity and support of its subscribers.

And there are few so shortsighted as to defer or curtail their subscription to this source of mental and moral power.

To add to your earning capacity is to add to your value. To get an expert knowledge of your business is to add to your power and influence.

The Trade Paper assists you to acquire these things. It is an aid to your mentality, your inventive genius, and a developer of latent talent.

By reason of its intelligent handling of this subject, and the closeness of the relationship existing between it and the subscriber, the Trade Paper has become an absolute necessity to thousands.

The tendency of the times is toward unification of principles in business.

Quality and service are being considered before profits.

Better conditions of labor are being evolved. A better understanding is aboard between master and man.

There is the spirit of courtesy and comity everywhere.

The Trade Paper fosters that fellowship—that bond of brotherhood.

It is not destructive—it is constructive. It is an architect, a builder, a creator. It provides the means out of which you may make your opportunities.

It stands for human betterment, purer laws, better goods. It is the university of business.

And so long as its policy remains such, so long will the Trade Paper receive the hearty aid and co-operation of its subscribers, and increase in power and influence as it does.

The Trade Paper has justified its existence by its usefulness—its service. Its possibilities depend upon your loyalty and co-operation.

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Do Not Overlook the "Letter Box"

It appears in this issue on page 1279 and is of intense interest to every reader. It also serves to show that "Brick and Clay Record" is being read understandingly and taking its place as an open forum for the clayworker, wherein he not only receives, but gives knowledge.

Making the Brick Course in Bogie

BEING AN OUTLINE SKETCH OF
ONE OF THE "MOULDING BOYS"

Joseph W. Moulding

General Manager, Tiffany Enameled Brick Compauy

CLEVERLY evading the lightning that threatened to strike at the meeting of the American Face Brick Association held in Chicago in March, when he raised his voice, clamorously, for Mr. Kilbourne, and did much to secure that gentleman's acceptance of the presidency, Joseph W. Moulding went to French Lick in December, hoping that the forked bolt would strike in some entirely different direction, and so leave him scathless. Man, however, proposes, and Fate disposes; his "mettle" attracted the stroke, he had forgotten his lightning arrester, and he came back to Chicago president of the American Face Brick Association—a young man at the head of a still young organization.

We are creditably informed that Mr. Moulding was born on September 23, 1873. He was also born to the deep purple of brickdom, his father having been a Chicago brick manufacturer. He spent some years at the Northwestern University, and, in 1892, helped to organize the Thomas Moulding Company, a brick-selling concern, named for his father, who had, but a short time before, passed into the Great Beyond.

Today he is secretary-treasurer of the Thomas Moulding Brick Company of Chicago, general manager of the Tiffany Enameled Brick Company of Momence, Ill., vice-president of the Buckeye Fire Brick & Clay Company of Scioto Furnace, Ohio, vice-president of the Straitsville Impervious Brick Company of New Straitsville, Ohio, and president of the Locomotive Arch Company of Chicago. It will be seen that Mr. Moulding is making the brick course in "bogie" as he makes all courses that present themselves to his flashing eye, whether they be brick courses or golf.

As all golf players know, championship form on the links takes a rare combination of steady nerves, tenacity and good judgment. The same qualities applied to business life make championship form in salesmen. And that is where Joseph W. Moulding shines—he is found where competition is keenest, bringing home championship honors in the shape of orders. That these orders are secured by salesmanship and not by price, is evinced by the healthy condition of the Tiffany Enameled Brick Company, to the disposal of whose product Mr. Moulding devotes a great deal of his time.

Mr. Moulding's acceptance of the presidency of the American Face Brick Association is most fortunate. He combines an intimate knowledge of the manufacturing end of the face and enameled brick business, with an every-day contact with the selling end, as it presents itself to a dealer. He is in a position to judge, therefore, the strength and the weakness of the claims made by both sides. As a manufacturer, he has had splendid opportunities of judging the worth of the dealer to the plant; as a dealer he has had many chances of learning how valuable the plant is to the dealer.

His election stands, therefore, as a compromise to the spirit and contention of both. It is a mark of progress, an indication of sound business sense on the part of the association, and an assurance of good feeling between manufacturer and dealer in this coming year—a year that promises to add much to the history of organization work among those who work in and with burned clay products.

A general view of the French Lick Springs Hotel where the two conventions of face brick men were held.

The meetings were held in separate halls on the second and third floors of the hotel and every convenience was afforded.

Face Brick Men Meet at French Lick

Two Conventions Held Dec. 10-12 Draw Large Delegations

BOTH CONVENTIONS TOLD IN BRIEF PARAGRAPHS

THE MANUFACTURERS:

The question of the relationship between the dealer and manufacturer was discussed and tentative plans laid to correct existing evils.

A new constitution and by-laws was adopted.

Ten rules of ethics for the dealer and manufacturer were chosen.

Joseph W. Moulding was elected president to succeed L. G. Kilbourne.

THE DEALERS:

The same officers that have guided the first year of the organization, were re-elected.

The constitution was amended as to the eligibility of new members.

A plan was launched whereby the U. S. Government is to be asked to give Clay Products the benefit of its educational work the same as it does other industries.

A CLOSER relationship and a more intelligent understanding as to the duties of each organization to the other is one of the achievements of the joint sessions of the American Face Brick Association and the Face Brick Dealers' Association of America, held during the meetings of the annual conventions of these two bodies at French Lick, Ind., Dec. 10-12. If nothing else had been accomplished this was, in itself, sufficient to have warranted the excursion to the American Carlsbad.

One hundred and twenty-six manufacturers and dealers were in attendance—the largest gathering of face brick men at one time and place in the history of the industry.

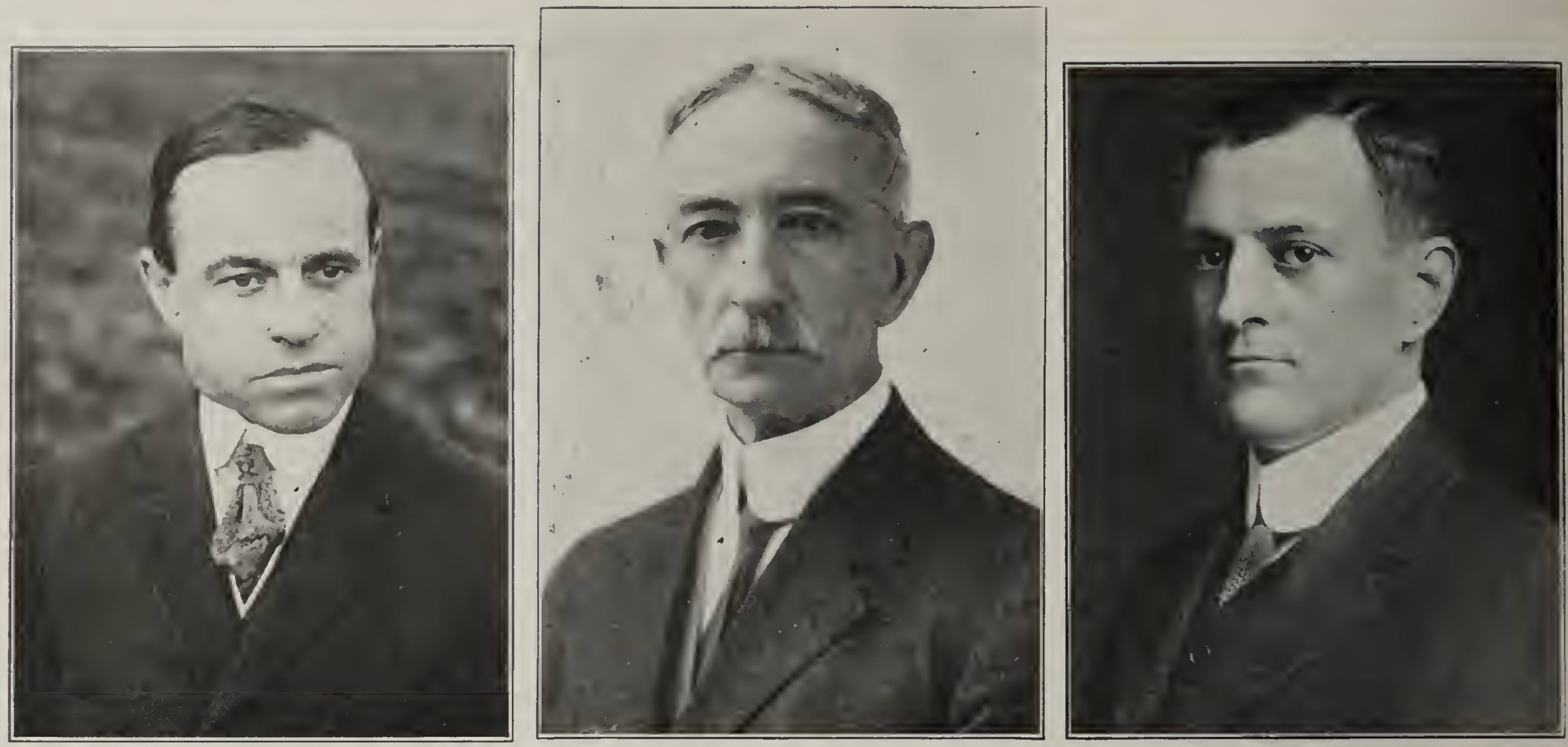
The meetings of the two organizations were held separately, with the exception of the joint session of Thursday and one or two minor conferences. At these joint meetings matters were discussed of great importance to both the dealers and the manufacturers and while little or no definite action was taken on any of the subjects under consideration, both bodies adjourned with the understanding that these would be given attention at subsequent meetings which will be called for that purpose within the next year at intervals.

Three important matters were given consideration by the manufacturers in their session—the question of the dealer and the manufacturer, the adoption of a new constitution and by-laws and the tentative adoption of ten rules of ethics under which it is believed the members will bring about a far better condition than now exists.

With the dealers the section of the constitution referring to the eligibility of members was amended to make clear who shall become members and who shall not; a more definite rule as to the methods of handling the products of the manufacturers was agreed upon and a resolution was passed which provided for a committee to prevail upon the United States Government to interest itself in the clay product industry much as it has in agriculture, steel and other industries.

New officers were elected by the manufacturers, L. G. Kilbourne, of the Columbus Brick and Terra Cotta Company, Columbus, Ohio, the retiring president, was succeeded by Joseph W. Moulding, of the Thomas Moulding Brick Company of Chicago and Secretary Hollowell was reappointed secretary-treasurer. The other officers follow: E. C. Clark, of the Kittanning Brick and Fire Clay Company, Pittsburgh, Pa., vice-president; J. W. Sibley, of the Sibley-Menge Brick and Coal Company, Birmingham, Ala., second vice-president. The new directors elected were: Joseph W. Moulding, ex-officio; E. C. Clark, ex-officio; J. W. Sibley, ex-officio; L. G. Kilbourne, Paul B. Belden, of the Belden Brick Company, Canton, Ohio; J. Parker B. Fiske, of the Fiske & Company, Inc., New York; S. Siwart Smit, of the Twin City Brick Company, St. Paul, Minn.

The face brick dealers re-elected the officers who have



On the left is Joseph W. Moulding, the newly elected president of the American Face Brick Association. On the right, R. D. T. Hollowell, who was reappointed Secretary-Treasurer. In center, L. Kilbourne, the retiring president.

served the few months of the first year, believing that they had held office for such a brief period and that as they were best qualified to carry out the work under way that it would be to the interests of the association to continue them at the helm. These officers are: F. Lawson Moores, of the Moores-Coney Company, Cincinnati, Ohio, president; R. L. Queisser, of the Queisser-Bliss Company, Cleveland, Ohio, secretary-treasurer. The other officers are: Vice-presidents—A. B. Meyer, of A. B. Meyer Co., Indianapolis; E. F. Knight, of the Buffalo Builders' Supply Co., Buffalo, N. Y.; W. G. Thomas, of Thomas Bros. & Co., Detroit, Mich.; L. W. Gaddis, of Gaddis-Harrison Co., Columbus, Ohio; Herman L. Matz, of the S. S. Kimbell Co., Chicago; F. J. Nixon, of Paine-Nixon Co., Duluth, Minn.; George Schwartz, of Ricketson & Schwartz, of Milwaukee, Wis. Executive Committee—A. E. Bradshaw, Indianapolis, Ind.; W. A. Fay, Cleveland, Ohio; F. B. Holmes, Detroit, Mich.; F. Lawson Moores, Cincinnati; R. L. Queisser, Cleveland, O.

On the golf links at the French Lick Springs Hotel—Picture shows a championship game between manufacturers and dealers.

The most important problem considered by the manufacturers was that which concerned the relationship between the dealer and the manufacturer. Tentative plans were laid by which, it is believed, many existing evils will be corrected.

The question of ethics raised by Frank W. Butterworth, of the Western Brick Company of Danville, Ill., in a paper which he read before the Convention, was almost of equal importance, if not as much, and the ten rules laid down by Butterworth were incorporated in a resolution and are to become the ethics of the face brick men.

Mr. Butterworth contended that brickmakers should have certain ethics much as the physician, the dentist, the architect and other professional men, and that these ethics, by common understanding and universal practice would raise the business to a higher plane. His paper follows in full:

An old Italian proverb reads: "There is honor among thieves."

In Punch we find: "Why is there honor among thieves? Because they stand together."

From Shakespeare's Henry IV, I quote: "Plague upon you, when thieves cannot stand together."

There exists in every line of business, and in every profession to a greater or less extent, certain rules for governing the conduct of persons engaged therein, as regards their relations to each other, and these rules or laws, are called the "Ethics of the Business or Profession." In a number of instances they are well-defined and have been formulated and expressed. In others they are unwritten, and understood and obeyed.

Perhaps the most effective and carefully followed code is that governing the practice of medicine, and the most familiar and universally obeyed rule is that prohibiting one physician from attending the patient of another without consent.

You can imagine the chaotic condition of the profession of law if there were not a well-defined code governing the internal relations of the members of the bar, one with another, and I do not think there is a profitable business today, of any kind, in which some ethical rules, or regulations, are not recognized, even in the ancient practice of thievery, as illustrated in the foregoing quotations.

It is upon this code, governing the relations of one organization with another, whether dealers or manufacturers, upon this "Honor Among Thieves" question, that I have been requested to prepare this paper.

I doubt if our president realized what a job he was assigning me. To be candid, I did not myself until some thought had been spent upon the theme, but if you will give this subject a little careful and earnest study, you will see that a set of carefully considered rules for the government of the selling of face brick, universally adopted and conscientiously obeyed, will correct a great many of the evils which we are now condoning.

Preliminary to this, let us analyze the average face brick sale. It separates readily into three factors: The interest of the architect, the approval of the owner, and the final purchase by the contractor.

Of late years, owing to the strong competitive conditions and the absence of any ethical code, it is becoming increasingly easy for each one of these factors to exert a strong bear influence upon the price, as the sale really becomes three sales: First, to the architect; second, to the owner; third, to the contractor, and quite often it is necessary to sell the fourth or fifth time, owing to the activity of some competitor, who does not know "When to quit."

On the right is R. L. Queisser, Secretary and Treasurer of the Face Brick Dealer's Association. In the center is J. M. Adams, a dominant figure among the manufacturers and the organizer of the American Face Brick Association. On the left is F. Lawson Moores, president of the Face Brick Dealers' Association.

This entire series of selling talks, which conservatively estimated, cost the face brick industry during the year 1912 at least one million dollars, has been devoted exclusively to robbery from each other, or protection against robbery by each other, and not one iota of effort or money has been expended to increase, or even protect, the industry at large.

Do you not think, gentlemen, my quotations are apropos—and it is high time we devoted some thought to the question of ethical laws?

Reverting to the sales analysis—the first factor thereof to be considered is the salesman's relation with the architect:

We all agree that the architect is the best friend we have—he is our only regular customer—he is the artist of artists—he spends years and years in preparing himself for his life-work—he is commissioned to design a building, and prior to touching paper with pencil, his trained imagination enables him to see that work completed, almost to the minutest detail. Coincident with outline has come color and texture—all are refined and refined again until his drawings and specifications are sent out for estimates. These are the distinct expression of his idea, upon which he has brought to bear that taste and artistic ability trained and trained again by years upon years of study and experience. The building is a product of his brain, and, as such, is as dear to him as a child—it is his child—his own creation.

Then enters upon the scene a ruthless brickman, who does not approve of his ideas, as expressed in the specifications, primarily because his own particular material is not mentioned. His mission in life seems to be, by fair means or foul, to substitute some thing, usually utterly incongruous to the architect's building idea, so carefully thought out. If he succeeds, which he often does, he murders the child, insults his best friend, and excuses the act by saying: "If I did not do it, some other brickman would." This practice can only be stopped by agreement.

In a number of instances it is impossible for the architect to specify definitely, and he has recourse to the system of naming a basic price upon which contractors figure. Following this comes the brick show: Panels, samples, traveling salesmen, and expense-accounts galore. All obnoxious to the architect; all expensive, all exercising a powerful bear influence on the price.

It seems to me that one of the most important functions of this association is to collaborate with the architects and draw up a set of rules, governing our relations with him. It will immediately give this association a standing with the profession and will, I feel sure, reduce the cost of selling our product at least one-half.

In connection with our code, governing architectural matters, the dealers and manufacturers should agree among themselves upon methods of display, submission of samples, whether loose or in panels, expenses of salesmen, and similar matters, and, my suggestion is, to state definitely the amount of money allowed per M. for this purpose and agree not to exceed it.

For your consideration I would like to submit the following business equation: Price decreases as personal animosity increases.

One of the most fruitful causes of personal enmity is the "knocking" of a competitor's material. The paving brick men have about eliminated this evil, and their way of doing it was to get into the minds of every manufacturer the idea that criticism of a competitive brick was a blow to the use of brick generally, and was giving competing materials a very good leverage to use against the industry as a whole.

A fruitful theme for discussion in this connection is whether or not the contractor is entitled to profit on the material he buys of us. Bearing in mind that he figures the actual cost of the entire building, and then adds a percentage for his profit, it would seem that the elimination of profit on our material forces him to figure more than a legitimate profit on some other material entering into the construction of the building.

I think you will agree that there should be "a place to quit," governing the selling end of our business. Some point should be established where all selling effort shall cease as distinguished from the present practice of never giving up the prospective sale, even after another brick has been delivered on the ground.

Another source of trouble, and consequent price lowering, is the readiness with which we accept, and even solicit, an order originally placed with a competitor, and afterward canceled for one cause or another. Certainly, you will agree with me, common courtesy should advise against this.

The writer of this paper is perfectly aware that all of these evils do not exist in all sections of the country, but he does know that they prevail in some territories, in which the men engaged in the brick industry are considered as having at least average intelligence. The fact that they do exist must be accepted as a menace to you, as you have no means of knowing how soon these same conditions will become universal or develop in your own district.

Consequently, in order to get this before the association for discussion, I propose the following resolutions, and move their adoption:

WHEREAS, Competition in the selling of face brick has become so keen as to be almost unscrupulous, endangering the life of the industry and encouraging ruinously expensive selling methods, it has become necessary for dealers and manufacturers to formulate a code of rules, governing the methods to be pursued in the selling of their product, in order to work in more perfect harmony with the architect, and to protect themselves against unscrupulous competition.

THEREFORE, BE IT RESOLVED: First, That a committee of three be appointed by the president to confer with the dealers' association.

Second, That the dealers' association be requested by that committee to authorize their president to appoint a committee of two to work with the manufacturers' association committee.

Third, That this committee of five, representing the dealers' and manufacturers' associations, confer with the architects of the country, through their organizations, with the idea of formulating and adopting an ethical code, which will govern our selling relations with them.

Fourth, That we, as manufacturers, agree that the amount of money expended on any prospect, in salesmen's expense; submission of samples, entertainment of committees, etc., shall be limited.

Fifth, That we shall put forth an earnest effort to eliminate all adverse criticism of competitor's materials.

Sixth, That whenever possible a profit shall be covered for the contractor.

Seventh, That a sale shall be considered as made and all competitive selling effort shall cease as soon as an adoption is secured, or the actual sale made. No adoption, or sale, to be considered as such, unless formally expressed in writing and signed by the proper parties.

Eighth, That the formal contract having been made, no competing manufacturer shall furnish brick on it, unless by written consent of the party who made the sale.

Ninth, That the most determined efforts shall be made to have all dealers become parties to these rules.

The adoption of a new constitution and by-laws was another important step by the manufacturers' association. The one adopted at the organization of the association about two years ago has proved inadequate. This new constitution, while adopted, was drafted in the rough and is to be redrawn and will be published in this magazine at a later date.

The manufacturers' convention opened Wednesday afternoon with a meeting of the board of directors. Half an hour later the first session of the membership was held. Following the routine business of calling the roll, reading the minutes and other preliminary work, President L. G. Kilbourne read his annual address.

Secretary Hollowell made his first annual report since his selection to the position which he holds.

The new constitution and by-laws was presented and action taken on the same and the session adjourned until the following day—Thursday.

Following the routine business Joseph W. Moulding of the Thomas Moulding Brick Company, Chicago, afterwards elected president of the Association, read a paper on "The Advantages of Adopting Uniform Methods to Improve the Service of the Members." This proved an interesting paper and will be printed in a subsequent issue of this magazine.

Secretary Hollowell made a highly instructive report on the freight traffic work done by the Association the past year. His paper will appear in a subsequent issue.

Frank W. Butterworth, of the Western Brick Company, Danville, Ill., followed Secretary Hollowell with his paper on "The Ethics of Selling Brick." This paper is given above.

Thursday afternoon a joint session was held by the manufacturers and the dealers. President Kilbourne called the meeting together and several addresses were made by members of both associations and by invited guests.

W. S. Smit of the Twin City Brick Company of St. Paul, Minn., spoke on "What the Manufacturers and Dealers Owe Each Other." Iverson C. Wells, editor of "Brick and Clay Record," on "Price Cutting"; Arthur D. Rogers, editor of "The Brick Builder," on "The Renaissance in Brick"; Theodore Randall, editor of "The Clayworker," on "The Possibilities of Organization"; H. W. Holmes, of the Puritan Brick Company, Detroit, Mich., on "Price Cutting versus Salesmanship."

These papers will be printed in subsequent issues.

Thursday evening a banquet was given the delegates of both organizations by Thomas Taggart, proprietor of the French Lick Springs Hotel. This was one of the many enjoyable courtesies extended the visitors by the hotel management. A special menu of an elaborate nature was printed for the occasion and, because of an appropriate reference to products of the clay industry, it proved an interesting diversion and copies long will be preserved as mementoes of the occasion. A special music program also was arranged by the hotel orchestra.

Friday morning the election of officers was held and, following some unfinished business, Will P. Blair, secretary of the National Paving Brick Manufacturers' Association, addressed the members in his characteristic way. Mr. Blair's talk was one of the most helpful during the entire convention and "Brick and Clay Record" expects to print it in full in some subsequent issue.

A brief session was held Friday afternoon and the adjournment followed.

DEALERS SOUND NEW KEYNOTE IN WORK DONE AT MEETING.

The convention of the Face Brick Dealers' Association was the first annual event of this organization as it was only formally launched early in the year. That the dealers feel the importance of such an association was shown by the large representation present. The convention opened with eighteen members. Twenty-seven new members were admitted into full membership during the convention, making a total membership of 45. The fact that every firm carrying a membership was represented by at least one member of the concern, and, in many cases by two or more, shows the deep interest in the work.

F. Lawson Moores, of the Moores-Coney Company, Cincinnati, president of the Association, presided at the meeting. No set program had been prepared for the speakers and whatever discussion was raised was informal in nature and participated in by the membership in general.

The sessions were held on the same days as those by the manufacturers and in a separate hall.

In speaking of the three days' meeting, Secretary Queisser declared that it was one of the most profitable conventions he ever had attended. "It has resulted in a far better understanding between the various dealers and has enabled us to learn of problems and pave the way for their solution that would have been impossible under any other method," said Mr. Queisser. "I might add, also, that we were brought into closer touch with the manufacturers by meeting with them in this manner and certainly our conferences and joint sessions will do much good towards improving conditions."

The eligibility of members was the first subject discussed by the convention. Article IV, Section 2, was amended to read: "Any individual, firm or corporation, representing five or more face brick manufacturers, and dealing regularly in face brick, may become a member by being endorsed by any two members LOCATED NEAREST OR IN THE CITY IN WHICH THE APPLICANT IS LOCATED, and BEING accepted by the board of trustees."

The capitalized words are the ones that were inserted into the article by the amendment.

It was further decided that firms dealing regularly in the face brick and answering the requirements of the amended section, although they be stockholders or part owners in an establishment manufacturing face brick, can become members.

It was decided also to incorporate the association and the executive committee was instructed to make proper legal inquiry as to the state which would best serve the interests of the organization and to take out the incorporation papers in that state.

A discussion of agency maters developed an amicable feeling in an attempt to discover and remedy many of the evils concerning the attitude of the members to each other and to the manufacturers.

Secretary Queisser introduced a resolution asking that a committee of six—three from the dealers' association, and three from the manufacturers' association, be appointed to interest the United States Government in issuing bulletins and giving out other information about the brick industry in a manner similar to that furnished for the farmer, the steel man, the cement man and other interests.

This resolution was presented at a joint session of both associations and was adopted. B. Mifflin Hood of Atlanta, Ga., William A. Black, of New York, and Herman Matz, of Chicago, were the three selected by the dealers for this committee. The manufacturers have not announced their committee.

Secretary Blair of the paving brick association, who was present at this joint session, volunteered to tell how his organization had interested the Government in getting out the first bulletin of an educational nature on clay products. This bulletin was issued under date of Sept. 17 and is declared to be one of the best arguments for the use of vitrified paving block ever printed. Mr. Blair also informed the meeting that the Government already had appropriated money for carrying on the work asked for by the face brick men and that the bureau of Standards was in charge of the same and under authorization and orders to issue the desired information. "All that is necessary is for you to demand what you want and you will get it," he declared.

Both associations expect to derive a great benefit from this promised helpful work on the part of the Government and declare that it is nothing more than should be expected by an industry that stands third among the mineral industries of the Nation.

The association discussed the work that has been done by Secretary Blair of the paving brick association among the various colleges the past six years and indorsed the idea as being of great value to the face brick interests.

Mr. Blair has delivered lectures on brick paving before many of the leading colleges, particularly before those that have an engineering course and his labors in this direction have converted a large number of young men who have gone out into the world to boost for burned clay as a paving material.

An amendment to the constitution was made which provides for the selection of vice-presidents from every state represented by the membership. These officers are to serve a year and will be chosen by the executive committee. No appointments have been made under the new rule.

Before adjournment Thursday afternoon the association decided to hold quarterly meetings in various sections of the country during the year. The first of these will be held at Cleveland, the date to be announced later.

FRENCH LICK IDEAL LOCATION FOR HOLDING CONVENTIONS.

There probably never was a convention held among the clayworkers where such universal approval was given the location of the meeting as was the case with the two face brick conventions.

French Lick was difficult for many of the delegates to reach because of its out-of-the-way location, but this handicap was overlooked by the delegates as there were so many advantages.

With ample accommodations for the entertainment of several thousand guests, a perfect hotel organization and the most courteous of treatment, Manager John Freeman left no stone unturned in his effort to make every one comfortable, to give entertainment and facilitate the business of the two organizations.

Isolated as the famous French Lick Springs Hotel is, with no detracting features to encourage delegates to evade the convention hall, every session of the two organizations was attended by a full representation and the business before them was transacted promptly and expeditiously.

The entire hotel and the various buildings with the golf course, the lawn tennis grounds, the drives and the baths were turned over to the visitors.

The fact that the time was the fag-end of the Fall season at the hotel proved fortunate for the brickmakers and dealers. Manager Freeman, not handicapped by the pressure attendant upon the regular season, could devote more time to the entertainment of his visitors and he took special pains in personally seeing that both conventions ran smoothly.

The golf grounds afforded considerable pleasure to those that like this game and the excellent links had a sprinkling of brickmakers and dealers on it every day during the idle hours of the conventions.

Horse back rides, buggy and automobile trips to the various scenes of interest in the vicinity were enjoyed by many. The beneficial mineral waters of the springs—not excepting the famous Pluto, were partaken of by many and the baths were patronized freely. The Casino—the Monte Carlo, was ablaze every evening and some of the bolder and more courageous brick makers and dealers dared to risk as much as a quarter on chuck luck or keno.

It is more than probable that many of the future conventions will be held at French Lick.

MANUFACTURERS AND DEALERS WHO ATTENDED BOTH CONVENTIONS.

There were 128 face brick manufacturers, dealers and guests in attendance at the convention of the American Face Brick Association and the Face Brick Dealers' Association of America at French Lick, Ind., Dec. 10-12. The complete roster follows:

Manufacturers' Roster.

Thomas C. Moulding, Thomas Moulding Brick Co., Chicago, Ill.
Daniel E. Reagan, Hocking Valley Products Co., Columbus, O.
L. W. McSprague, McArthur Brick Co., McArthur, O.
H. S. Hamilton, McArthur Brick Co., McArthur, O.
Chas. C. Stratton, Alumina Shale Brick Co., Bradford, Pa.
G. W. McNees, Kittanning Clay Mfg. Co., Kittanning, Pa.
J. H. Black, Jewettville Brick Co., Buffalo, N. Y.
Ben S. Fisher, Columbus Brick & Terra Cotta Co., Union Furnace, O.
W. D. Richardson, Claycraft Mfg. & Brick Co., Shawnee, O.
M. Mc. Everhard, The Everhard Co., Massilion, O.
J. B. Nicholson, Toronto Fire Clay Co., Toronto, O.
C. P. McFadden, Toronto Fire Clay Co., Toronto, O.
D. J. Kennedy, Darlington Brick & Mfg. Co., Pittsburgh, Pa.
H. R. Beagle, Beaver Clay Mfg. Co., New Galilee, Pa.
E. C. Howard, Claycraft Brick Co., Columbus, O.
P. B. Belden, Belden Brick Co., Canton, O.
J. Parker B. Fiske, Fiske & Company, Inc., New York. N. Y.
W. J. Snyder, Brazil Clay Co., Brazil, Ind.
J. H. Zeller, Brazil Clay Co., Brazil, Ind.
F. W. Butterworth, Western Brick Co., Danville, Ill.
L. G. Kilbourne, Columbus Brick & Terra Cotta Co., Columbus, O.
R. D. T. Hollowell, Secy. Amer. Face Brick Assn., Pittsburgh, Pa.
W. Siwart Smith, Twin City Brick Co., St. Paul, Minn.
Ed H. Cobb, Hydraulic-Press Brick Co., Minneapolis, Minn.
S. J. Hewson, Hydraulic-Press Brick Co., Minneapolis, Minn.
John W. Sibley, Sibley-Menge Brick & Coal Co., Birmingham, Ala.
Ralph Simpkins, Hydraulic-Press Brick Co., St. Louis, Mo.
F. C. La Fountain, Kansas Buff Brick & Mfg. Co., Kansas City, Mo.
B. W. Ballou, Kansas Buff Brick & Mfg. Co.., Buffville, Kans.
J. W. Moulding, Thomas Moulding Brick Co., Chicago, Ill.
H. W. Holmes, Puritan Brick Co., Detroit, Mich.
J. M. Adams, The Ironclay Brick Co., Columbus, O.
John Andres, Standard Brick Mfg. Co., Evansville, Ind.
G. B. Luckett, Crawfordsville Shale Brick Co., Crawfordsville, Ind.
Carl C. Walters, Hocking Valley Products Co., Columbus, Ohio .
E. Curtis Clark, Kittannning Brick & Fire Clay Co., Pittsburgh, Pa.
Jos. Degenhart, Jewettville Brick Co., Buffalo, N. Y.

E. A. Stewart, Stark Brick Co., Canton, O.
F. A. Hoiles, Alliance Brick Co., Alliance, O.
H. C. Cranex, Lexington Brick Company, Lexington, Ky.
John A. Qualman, Saginaw Paving Brick Co., Saginaw, Mich.
James G. Beemer, Chestnut Ridge Brick Co., New York, N. Y.
James G. Beemer, jr., Chestnut Ridge Brick Co., New York, N. Y.
B. T. Cotter, Coshocton Brick Co., Coshocton, O.
C. A. Gardner, Am. Enam. Brick & Tile Co., New York, N. Y.
Chas. T. Harris, Fiske & Company, Inc., New York, N. Y.

Dealers' Roster.

Chas. A. Bonner, Bonner & Marshall Brick Co., Chicago, Ill.
James P. Williams, St. Louis, Mo.
Harry C. Podolsky, Bonner & Marshall Brick Co., Chicago, Ill.
F. Lawson Moores, Moores-Coney Co., Cincinnati, O.
G. J. Parke, G. J. Parke & Sons Co., Decatur, Ill.
W. A. Fay, Cuyahoga Builders Supply Co., Cleveland, O.
V. H. Kriegshaber, V. H. Kriegshaber & Son, Atlanta, Ga.
A. B. Meyer, A. B. Meyer & Co., Indianapolis, Ind.
Herman L. Matz, S. S. Kimbell Brick Co., Chicago, Ill.
John D. Matz, S. S Kimbell Brick Co., Chicago, Ill.
Samuel E. Walter, Standard Salt & Cement Co., Duluth, Minn.
James J. Lyons, Meacham & Wright Brick Co., Chicago, Ill.
John B. Drives, jr., Drives & Struck, Madison, Wis.
M. N. Kimbell, S. S. Kimbell Brick Co., Chicago, Ill.
Charles Bonner, Bonner & Marshall Brick Co., Chicago, Ill.
Albert D. Klein, Sunderland Bros. Co., Omaha, Neb.
Frank J. Nixon, Paine & Nixon Co., Duluth, Minn.
W. L. McGiverin, Dartnell, Ltd., Montreal, Canada.
F. B. Holmes, F. B. Holmes Co., Detroit, Mich.
R. L. Queisser. The Queisser-Bliss Co., Cleveland, O.
E. A. Guner, The Queisser-Bliss Co., Cleveland, O.
W. H. Willis, The Storey-Willis B. & S. Co., Cincinnati, O.
L. R. Binyon, S. S. Kimbell Brick Co., Chicago. Ill.
J A. Hogan, S. S. Kimbell Brick Co., Chicago, Ill.
B. Mifflin Hood, B. Mifflin Hood Brick Co., Atlanta, Ga.
E. F. Grand, The Pursell-Grand Co., Cincinnati, O.
Walter Pursell, The Pursell-Grand Co., Cincinnati, O.
A. E. Bradshaw, Indianapolis Mortar & Fuel Co., Indianapolis, Ind.
Guy P. Dean, Pfotenauer-Nesbit Co., New York, N. Y.
F. C. Manson, Pfotenauer-Nesbit Co., New York, N. Y.
A. S. Reid, A. S. Reid & Co., Newark, N. J.
F. G. White, Jenkins & Reynolds Co., Chicago, Ill.
E. K. Cormack, Wisconsin Lime & Cement Co., Chicago, Ill.
Emil M. Kratz, Pennsylvania Coal & Supply Co., Milwaukee, Wis.
Wm. P. Varney, Hydraulic-Press Brick Co., Chicago, Ill.
R. S. Dingledine, Columbus Contractors' Supply Co., Columbus, O.
Ralph Spencer, Dresden Brick Co., Detroit, Mich.
R. B. Harbison, Gaddis-Harrison Brick Co., Dayton, O.
J. C. Crigler, Gaddis-Harrison Brick Co.. Dayton, O.
Chris F. Harrison, Gaddis-Harrison Brick Co., Columbus, O.
LeRoy W. Gaddis, Gaddis-Harrison Brick Co., Columbus, O.
C. E. McCammon, L. H. McCammon Bros., Cincinnati, O.
G. H. Francis, Keystone Clay Products Co., Greensburg, Pa.
Theo. H. Swan, Rochester, N. Y.
T. B. Foreman, Pittsburgh Clay Products Co., Pittsburgh, Pa.
David McGill, Montreal, Canada.
F. H. McDonald, Grand Rapids, Mich.
Louis Snavely, Minglewood Coal Co., Wooster, O.
Donnelly Wever, The Moores-Coney Co., Cincinnati, O.
John M. Stone, Cincinnati Clay Products Co., Cincinnati, O.
C. E. Harding, Waldo Bros., Boston, Mass.
F. R. Upton. Newark, N. J.
C. W. Meeker, Newark, N. J.
L. A. Norman, Grand Rapids. Mich.
J. F. Leonard, Cuyahoga Builders Supply Co., Cleveland, O.
W. C. Black, Cake & Black, New York, N. Y.
Alfred Tyler, Baltimore, Md.
J. A. Dolben, Dolben & Sullivan, Boston, Mass.
Edw. Whitehall, Milwaukee, Wis.
Edwin T. Knight, Buffalo Builders' Supply Co., Inc., Buffalo, N. Y.
H. D. Lounsbury, Fredenburg, Lounsbury & Houghtailing, Inc., New York, N. Y.
E. H. Moellering, Fort Wayne, Ind.
Theo. C. Schwier, Fort Wayne, Ind.
F. B. Adams, Indianapolis, Ind.

Guests' Roster.

Ralph Reinhold, Rogers & Manson Co., New York, N. Y.
Walter Schapper, Rossler & Hasslacher Chemical Co., Chicago, Ill.
W. W. McCall, "Dealers' Record," Chicago.
B. I. Grossner, Queen & Crescent Route, Cincinnati, O.
Theo. A. Randall, Editor "Clay Worker," Indianapolis, Ind.
George A. Olsen, "Dealers' Record," Chicago.
A. R. Root, Chambers Brothers Company. Philadelphia, Pa.
J. Crow Taylor, "Clay Worker" Indianapolis, Ind.
Iverson C. Wells, Editor "Brick & Clay Record," Chicago.
Will P. Blair, National Pav. Brk. Mfrs. Assn., Cleveland, O.
C. B. Sherer, American Clay Machinery Co., Bucyrus, Ohio.
C. L. Rorick, Bus. Mgr., "Brick & Clay Record." Chicago.
C. C. Woodworth, Southern Railway, Cincinnati, O.
Arthur D. Rogers, Editor "Brickbuilder," Boston, Mass.
G. A. Anderson, J. D. Fate Company, Plymouth, Ohio.

Iowa Association Adopts Open Price Policy

THE IOWA CLAY MANUFACTURERS' ASSOCIATION went on record for the adoption of open price policy at the annual convention held in Des Moines, Dec. 10-12. A committee was appointed to investigate the details of reorganization along these lines and it is highly probable that before the year of 1914 has gone very far this progressive body of clayworkers will be operating under the system of "The New Competition." This decision followed an address on the subject by Iverson C. Wells, editor "Brick and Clay Record."

The session of the Association was one of the best ever held and a highly interesting program was observed, consisting of papers and addresses by practical men who sought to solve the various problems confronting the clay product manufacturer. A full report of this meeting will be printed in the Jan. 6 issue of this magazine.

Potters' Association Elects Officers.

Forty-seven kilns were added to the production of domestic ware in the United States during the last year, and this has established a new record for increased capacity in this industry within a given limit of twelve months. This fact was brought out at the annual meeting of the United States Potters' Association, which convened at the Fort Pitt Hotel, Pittsburgh, Pa., December 2-3. The calendar year, however, according to members of the Labor Committee, has been a most strenuous one so far as that part of the industry is concerned. Starting early in the year when the warehouse and dipping house girls went on strike, the labor troubles of the year were not brought to an end until just a few weeks ago, when an instrument, known as the "Astor Argeement," was signed by representatives of the United States Potters' Association, and those representing the National Brotherhood of Operative Potters.

It is reasonable to presume, according to W. E. Wells, secretary of the Homer Laughlin China Company, and chairman of the Labor Committee of the association, that clear skies have appeared, and that the situation in the domestic pottery business, so far as labor is concerned, is all that could be asked at the present time.

According to provisions contained in the "Astor Agreement," four additional committees are necessary on the part of the association to carry out some of the clauses of that instrument. There are two committees each for the "Eastern" or Trenton, N. J., district and "Western" or East Liverpool, Ohio, district, which are known as the "Eastern" and "Western" Help Committees and "Eastern" and "Western" Discharge Committees. It is the purpose of both employer and employe to put a stop for once and all to the competitive bidding for help, and the paying of a bonus to young help to get them to leave their present employers. This is admitted to have been a curse within the trade, and was brought about by the jiggermen and and other workers who employ help, to "get" the helper of his fellow worker. Such a condition has created an independence among the help that has reacted upon the manufacturer in keeping down production.

It has been urged upon the association that there be formed an organization of superintendents, heads of departments, and shop foremen for the purpose of mutual benefit, not only to themselves, but to the general benefit and welfare of the trade. It has been pointed out that a greater amount of efficiency could be created should there be a general intercourse of thoughts, ideas and experiences which come up in the everyday routine work of the potteries, and that many of the numerous difficulties now bobbing up daily could be overcome.

The election of officers for the United States Potters' Association for 1914 resulted as follows: W. S. George, of East Palestine, Ohio, president; William Burgess, of Trenton, N. J., first vice-president; Charles F. Gosser, of Coshocton, Ohio, second vice-president; T. A. McNichol, of East

Liverpool, Ohio, third vice-president, and Charles F. Goodwin, of East Liverpool, Ohio, secretary-treasurer.

The Executive Committee that was chosen for the year is as follows: Col. John N. Taylor, of East Liverpool, Ohio, chairman; Charles Howell Cook and A. G. Dale, of Trenton, N. J.; Charles F. Gosser, of Coshocton, Ohio, and the following, all of East Liverpool, Ohio; W. L. Smith, W. E. Wells, Charles A. Ashbaugh, George C. Thompson, H. N. Harker and Edwin M. Knowles.

The Labor Committee is composed of W. E. Wells, chairman; H. N. Harker, F. G. Meller, of Trenton, N. J.; John N. Taylor, Thomas A. McNichol, Frank A. Sebring, of Sebring, Ohio; Moses Collear, of Trenton, N. J.; George C. Thompson and T. B. Anderson, of East Liverpool, Ohio.

Sand-Lime Brick Convention.

Harrisburg, Pa., was the scene of the Tenth Annual Convention of the Sand-Lime Brick Association, held Dec. 9 and 10. The program consisted of a business meeting held on the morning of the 9th, followed by a visit to the plant of the Hummelstown Brownstone Company's plant at Waltonville, Pa. The following speakers were scheduled for the second day: H. H. Spackman, of Philadelphia, on "Essentials for Success in the Manufacture of Sand-Lime Brick"; G. Silvester, of Calgary, Alta., on "Sand-Lime Brick in Canada"; W. J. Carmichael, of Willoughby, Ohio, on "Sand-Lime Brick in the Sub-Tropics"; W. E. Emley, of the U. S. Bureau of Standards, Pittsburgh, Pa., on the "Analytical Study of Brick Specifications."

Short Courses in Engineering.

Further announcement is made of the short courses in engineering that are to be given from Dec. 29 to Jan. 9, inclusive, at the Iowa State College at Ames, Iowa. These Winter courses mark a new step in the activity of the Iowa State College and provide, in condensed form, instruction applying especially to the problems of engineering and clayworking. They will consist of ten one-hour periods, from 9 to 10 A. M. on the ten days that are included in the schedule, each one-hour period being followed by a two-hour period from 10 to 12 A. M. daily, the latter being in connection with the clayworking laboratory.

Engineering Courses at Illinois.

Following, so far as date is concerned, the short courses in engineering that have been inaugurated at Ames, Iowa, the University of Illinois, Urbana, Ill., will hold a series of lectures on highway engineering, Jan. 19 to 31, 1914. No charges will be made by the University and the courses are open to everyone without preliminary examination or other condition. The work will be planned, primarily, to assist the new County Superintendents of Highways in the duties devolved upon them by the recently enacted state highway law. Those who aspire to appointment as either County or Township Superintendents and all others interested in good roads, will find these courses of great value, as well as fitting those who take them for employment under the Illinois State Highway Commission. Programs and other information may be obtained by writing Ira O. Baker, Professor of Civil Engineering, Urbana, Ill.

Highway Engineering at Columbia.

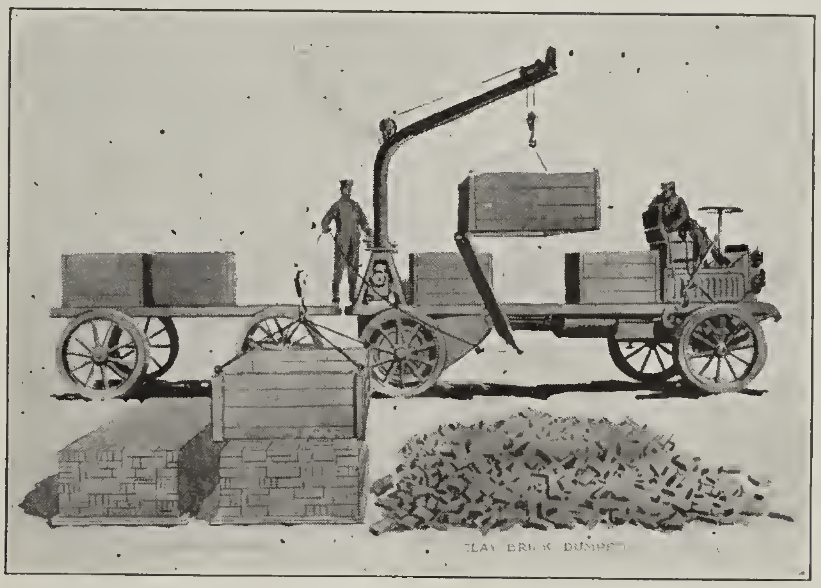
Illustrated lectures on Highway Engineering are being given at Columbia University, New York, the first being by Arthur N. Johnson, State Highway Engineer of Illinois, and scheduled for Dec. 13. The second, "Highways of the Northwest," by Samuel Hill, president, American Road Builders' Assn., of Seattle, Wash., was delivered on the 15th inst. The next lecture will be on the 23rd and will be "The Manufacture of Refined Water Gas Tar," by Walter H. Fulweiler, chief chemist, United Gas Improvement Co., of Philadelphia. The last will be by Philip P. Sharples, chief chemist, Barrett Mfg. Co., Boston, and will deal with "The Manufacture of Refined Coal Tar." Further lectures will be announced later, all having to do with one phase or another of road building and highway engineering.

KEEP MOTOR TRUCK ON MOVE TO GET GREATEST EFFICIENCY

It has been said that to make any machine profitable it must be kept in use. This is true also of the motor truck. Every moment the wheels of a truck are not turning there is a loss of efficiency, with consequent increase in operating cost per ton mile, just as there is a loss of efficiency in a brick machine that is permitted to lay idle.

Economy, therefore, in large capacity trucks has been possible only on hauls where the loading and unloading time losses are but a moderate portion of a full day's service.

To secure this economy in all cases the Locomobile Company has devised a power-operated, demountable-dumping body which, by making the working time of the truck chassis practically continuous, makes the short haul operation of heavy duty trucks as economical as long haul work.



This proposition in motor truck delivery is accomplished by separating the body of the truck from the chassis and providing two or more bodies for a given chassis. The chassis will pick up a loaded body in the fraction of a minute, leaving an empty on the loading platform to be loaded at will. Returning from its delivery route it exchanges an empty for a loaded body, proceeding on its way without almost any delay.

Special bodies are made for dumping brick and clay. The Penfield brick handlers can also be utilized if desired and the brick dumped on the job just as they are taken from the kiln. The same bodies may be demounted for hand-loading from the yard, the team track or freight cars.

By the use of trailers 56,000 brick can be handled in a day of a four-mile round trip. Without trailers 36,000 brick can be handled. Without trailer 15,000 paving block can be handled on a four-mile round trip and 27,500 with a trailer.

In a subsequent issue there will appear some practical articles by actual users of motor trucks in the brick manufacturing business.

Dayton Rebels at Creosoted Block Pavements

DAYTON, OHIO, is very much dissatisfied with the creosoted wood block laid about one year ago in Grand avenue as an experiment, and the local papers have been printing columns about the failure of the block as a paving material, and showing pictures of the unsightly streets.

C. W. Raymond, Jr., of the C. W. Raymond Co., has sent "Brick and Clay Record" copies of the Dayton paper containing these articles and the two illustrations accompanying this article are made from photographs that accompanied the newspapers.

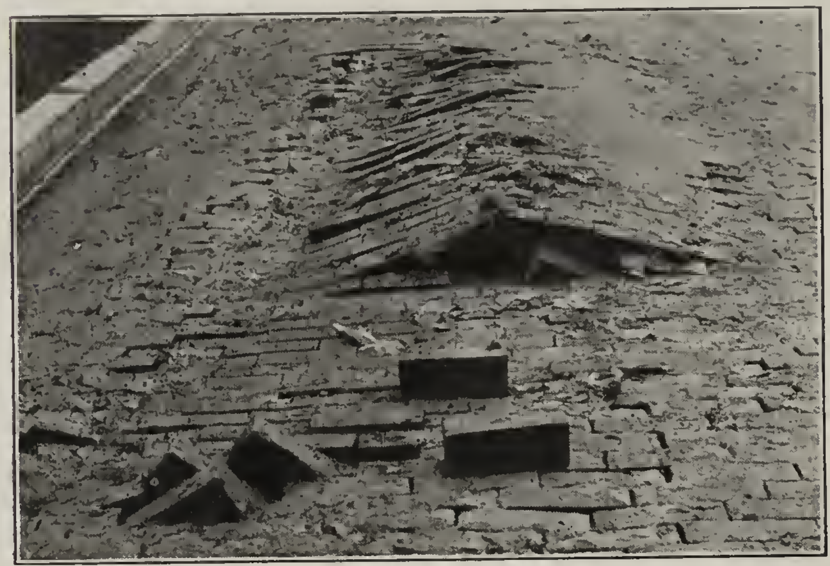


Fig. 1. This photograph was taken Nov. 14, 1913, and shows the condition of Grand Avenue between Salem Street and Broadway. Note the loose condition of the block over the entire surface. These block can be lifted easily with the fingers and the condition is due to shrinkage of the wood following a rain.

The Dayton Municipal Research Company, acting on the complaint of residents along Grand avenue, has concerned itself about the block and the Greater Dayton Association likewise has had investigators at work. The city itself has made an official investigation and the reports of these various bodies does not encourage one to believe that Dayton will try any further experiments with creosoted block.

The photographs shown are fair examples of the entire length of the street. The block are raised from one-half an inch to two inches above grade on practically the entire street. In some places block have floated out of the street, particularly near catchbasins.

L. D. Upson, director of the Greater Dayton Committee, who made an investigation for that body, lays the trouble chiefly to "the inadequate penetration of the creosote," and to "a combination of sand-filled joints and the presence of a great deal of water on the pavement due to stopped-up catchbasins."

It would seem from this that creosoted block are not practical where there is moisture, and as all streets are subject to moisture—through rains and street sprinkling—where do the wooden block come in?

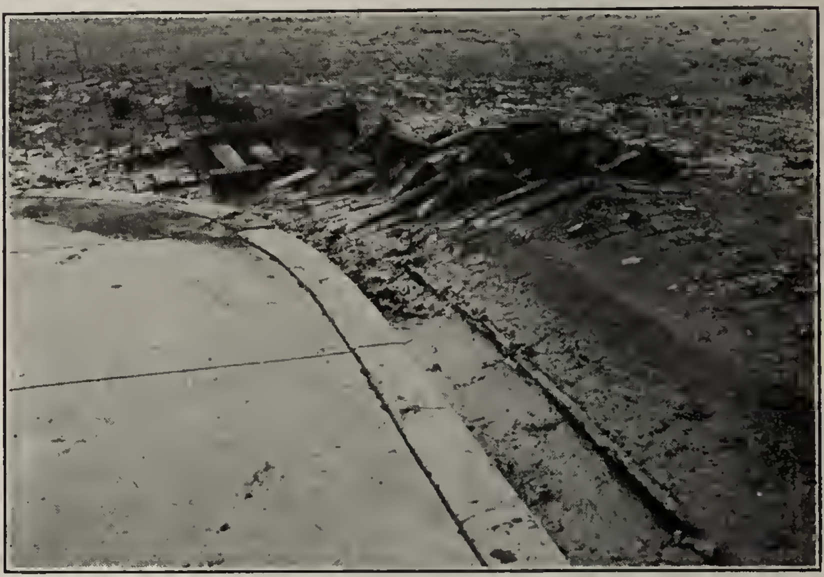


Fig. 2. Another view of Grand Avenue, taken Nov. 14, 1913. The block near the curb buckled following a recent rain. An investigator for the Greater Dayton Committee declares "too much moisture" caused this condition. This same situation is common wherever wooden block are used as a paving material. It does not take long for the oil preservative to ooze out and make room for water, which is death to the block.

Public Roads in Florida.

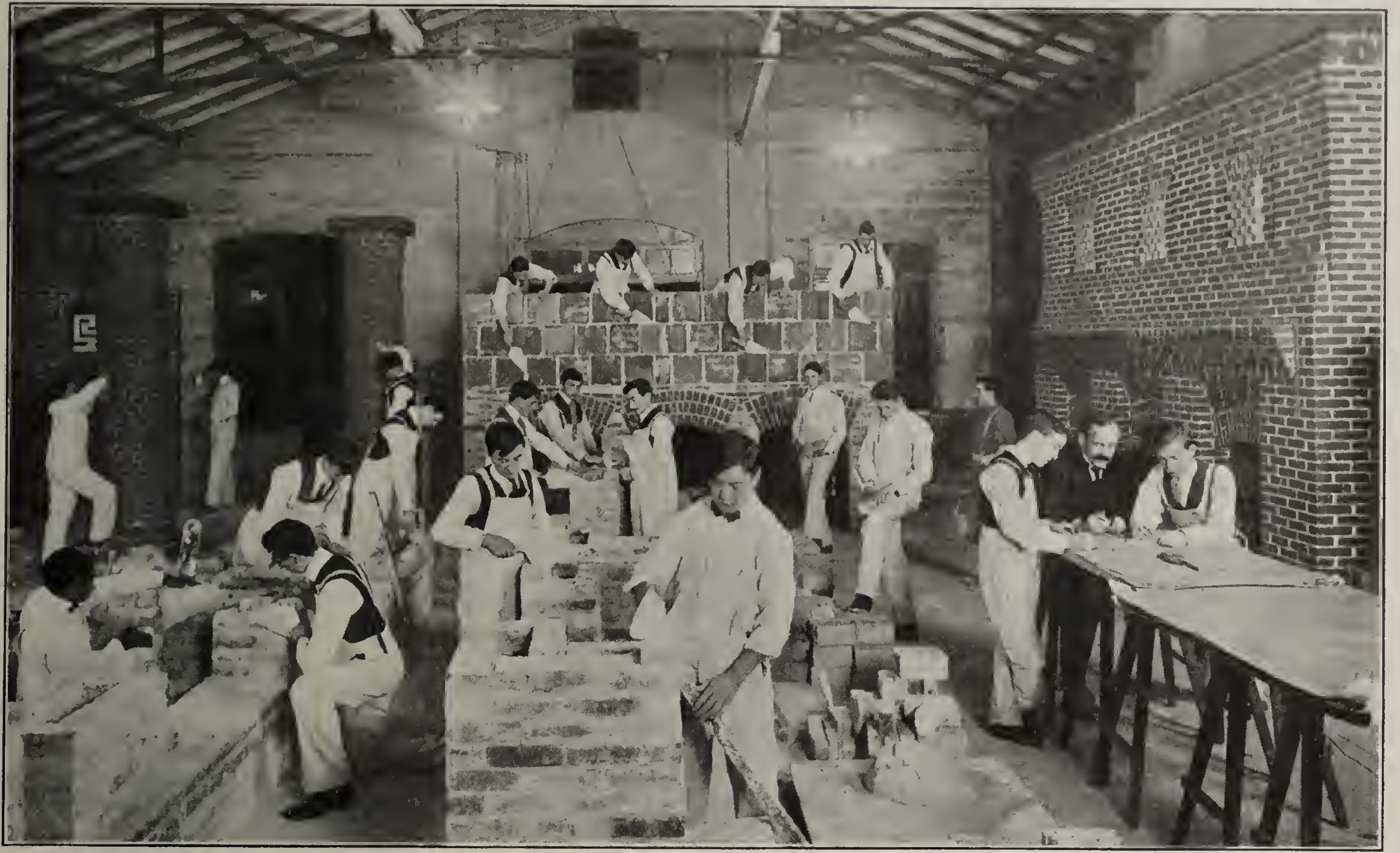
In the Fifth Annual Report of the Florida State Geological Survey, the statistics on roads and road materials used in that state are brought down to the close of the year 1912. While the statistics in regard to mileage and cost of construction are necessarily approximate, yet the data are sufficiently accurate to give in a general way the present condition of road building in the State. The information has been supplied chiefly by courtesy of the county officials of the several counties.

At the close of 1912 the total mileage of improved roads in Florida was approximately 2,848 miles. Of this number 857.8 miles are surfaced with marl or crushed stone; 1,408.75 are surfaced with sand-clay, 218 miles are surfaced with shell; 5.2 miles with cement; 26.5 miles with gravel; .4 mile with asphalt and 8.5 miles with brick.

In addition to the funds available from regular and special taxes, the following counties have issued bonds during the past two years for road improvement: Alachua, $40,000; Columbia, $40,000; Dade, $250,000; Jackson, $100,000; St. Johns, $30,000; Walton, $70,000. The following counties had previously issued bonds: Duval, $1,000,000; Hillsboro, $400,000; Manatee, $250,000; Nassau, $60,000; Palm Beach, $200,000; Putnam, $155,000, and St. Lucie, $200,000. The total expenditure on public roads in Florida from all sources exceeds one million dollars per annum.

Rich Girl Becomes Clayworker.

Miss Elizabeth Stratton, 18 years old, for whom the police throughout Western Pennsylvania had been searching and who was found at New Bethlehem, Pa., in male garb, pushing a wheelbarrow in a brick plant, was taken to her home in Falls Creek, Clearfield County. Miss Stratton, whose father is wealthy, left home after donning her brother's clothing and cutting off her hair. She slept under a lumber pile the first night. The next day she got work at New Bethlehem. Later she was recognized. "I wanted to have a boy's freedom for a while," Miss Stratton said. "My hands are blistered, but I was game and enjoyed it."



A Class in Bricklaying at the Carnegie Institute of Technology, Pittsburgh, Pa. Note the variety of work that is being done.

Developing the Nation's Builders

Andrew Carnegie, Practical Philanthropist, Teaches Young Men How to Become Scientific Bricklayers and Contractor-Builders, Later to Become Boosters for Burned Clay

By Millard K. Zimerman

The brickmaker in the small town or rural community labors under more than one handicap in his effort to place his material in the buildings being erected around him. One of these, and probably the most serious, is the local contractor. Quite often this individual holds the key to the entire situation, and proves a decided stumbling block to burned clay, for what profits you, if, after prosecuting a vigorous campaign of education, which converts Jones to brick, you must turn to the only contractor in town, who is an ex-carpenter?

The clayworker's educational campaign must not only teach the buying public that burned clay is the best material but must teach it how to use it. One way to accomplish this is to educate the young men to become bricklayers and encourage these to become mason contractors and, by natural sequence, boosters for burned clay, even as the carpenter-contractor is a booster for lumber.

Mr. Zimerman tells us here of the wonderful work the Carnegie Institute of Technology is doing and how it is teaching an army of young men to become competent builders of a fireproof nation.

IT WAS but a few years ago when the National Brick Manufacturers' Association met in the English room of the Fort Pitt Hotel, Pittsburgh, Pa., and right out in meeting declared that the more education the young man received in bricklaying, just that much more the brick manufacturers would benefit. It was reasoned out in this wise: If the technical schools of the country educate bricklayers, they in time will be boosters of brick, for it will be their business to be so. Later these students in bricklaying will become contractors, and brick will be boosted still more.

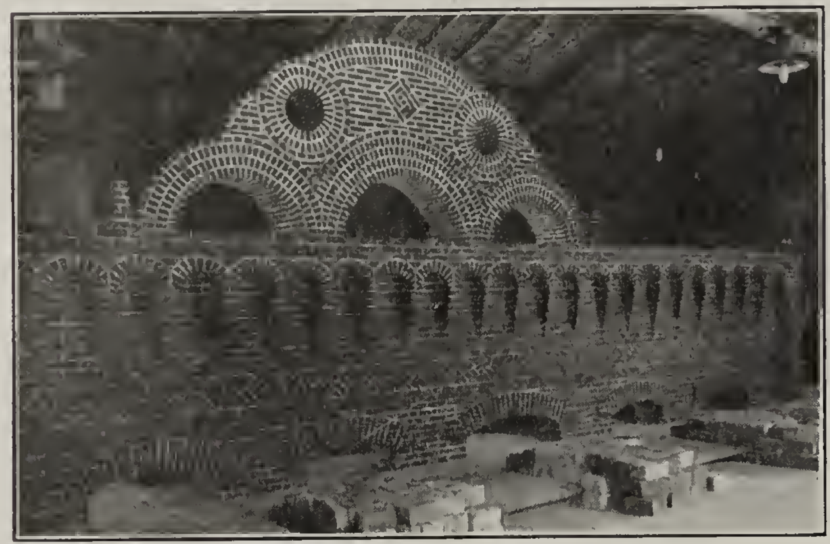
All of which is truth, and, somewhat of human nature.

Now cometh one Andrew Carnegie, who, in the very town where a meeting was held advocating bricklaying instruction, bringeth an endowment for the very purpose that brick manufacturers talked of and fought for.

Result: A school where building construction and bricklaying is taught in all its varied forms. Another result: Classes have a large enrollment, and the students are accomplishing their aim.

The course in building construction at Carnegie "Tech" at Pittsburgh has been planned with a view to giving instruction in the general and technical knowledge needed by those engaged in building operations. It aims to develop men who will not only be skilled in their trades, but also have a training which will enable them to hold the position of foreman or superintendent.

The work of the first two years is devoted to instruction in mathematics, physics, chemistry, English, drawing and also in the carpentry shop, the sheet metal and cornice shop, the bricklaying and masonry shop and the plumbing shop.



A sample of student work in the bricklaying at Carnegie Institute of Techanology.

In the third year the student is permitted to specialize in the trade for which he has the greatest aptitude or inclination. The instruction in the academic studies continues, and is so arranged as to suit the requirements of the various trades. Visits of inspection are made from time to time to familiarize the student with actual building operations.

In Carnegie "Tech," the bricklaying course consists of practical exercises in and lectures on the different branches of the trade, explaining specifications, plan reading and estimating. Among the subjects taken up by the student in bricklaying are: Tools—their use and care—the proper handling of mortar, striking of different kinds of joints, building straight walls of different thicknesses, building of angles, piers, arches and fireplaces, setting of window frames and caps, building of scaffolding, inside and outside, the application of fireproofing upon steel structural shapes, construction of brick and terra cotta floor arches, the making of ornamental cornices, the use of pressed brick in construction work, and the placing of drain pipes and chimneys.

During the course, numerous and highly instructive lectures "by those who know," and who have been taught by years of actual experience, are given. These lectures cover a wide scope and cover the setting of centers, fireproofing work, fire brick and building brick, outside scaffolding, facing with pressed brick where stone or iron is to have a bearing, excavating to put in a footing course of concrete, stone, or brick, damp-proofing, preparing mortar and cement, and the coloring of mortar; the use of vitrified brick, the setting of stone and terra cotta walls, laying out and building arches, cutting out mortar and cement joints from between the bricks and plugging the same with wood plug, using steel drill in cement, stone or brick—a process much needed in connection with electrical work—the careful cutting of a brick or number of brick out of a fine piece of brick work, and replacing same with brick that the change may not be detected, and the removal of a part of a wall and underpinning the same in a skilful manner.

Much care is used in training the eye of the student that work not properly done may be detected quickly, without the use of plumb-rule, level or steel square.

The bricklaying shop, a part of which is shown in the accompanying illustrations, is a well lighted room on the ground floor, especially designed for the purpose. It is conveniently situated with reference to the handling of the large quantities of materials required. Immense supplies of brick of various grades, sand, lime and other materials of a "raw" character, are kept in an adjoining store room.

In the matter of tools, this is the list that the student is provided with: Trowels, standard and pointing; hammers; broad, cold and joining chisels; joining tools; try-squares; lines and line pins; plumb-bobs and rules; levels and leveling boards; measuring rules; hatchets; saws, dust brushes; mortar-hoes; holds, sieves, boards and boxes; water hose; slack boxes; brick hods; water buckets; brooms.

In teaching the student to build a scaffold his instructors provide him with boards, planks, trestles, uprights, leger boards and ladders and wood centres—elliptic, segment, half-circle and Gothic.

The one-year, intensive-day-trade course in bricklaying was planned to meet the needs of men, who for obvious reasons, are not in a position to take up a broad industrial training, but who desire a thorough and practical instruction in this single trade. Owing to the peculiar intensive nature of the instruction, a training is afforded the young man so situated that will be of immediate value, giving skill, accuracy and knowledge of the technical points of this trade. This is done by familiarizing the student with modern methods and thus preparing him for advancement and an increase of earning power.

Close tabs are kept on the students and all work is carefully noted and a permanent record is kept. Men who complete any portion or all of the work in the intensive bricklaying course are given an official statement of the credit units they have received during their time in school, which thus sets forth the work done by the student, and the efficiency that has been attained.

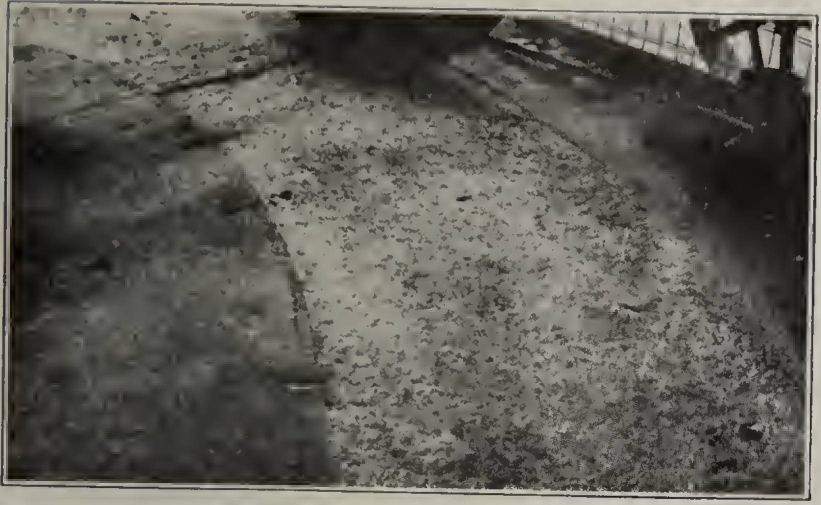
Hundreds of young men have acquitted themselves with honor in this, the largest bricklaying school in the country, and, those who have gone out into the trade are the biggest boosters for brick to be found.

Bricklayers Conduct Night School.

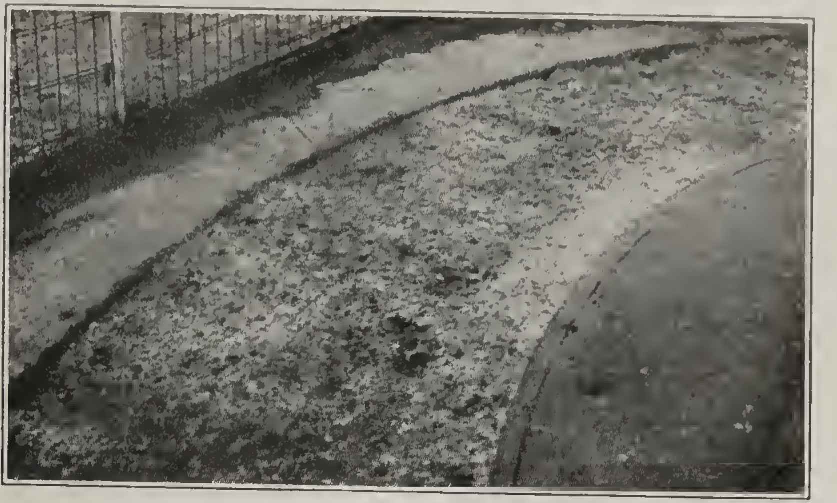
The bricklayers of Minneapolis, Minn., enthusiastic over vocational education, not to be behind other building trades crafts, have started a night school at the Central High School building. The classes convene two nights each week and are under the supervision of a journeyman bricklayer. The course includes plan reading, estimating and other technical questions, allied to the bricklaying trade. It is asserted that this is the first night school that the bricklayers of this country have inaugurated, but with the instant success which has been achieved it is probable that schools of this character will be commenced in other sections of the country.—Bricklayers' Masons' and Plasters' Journal.

Another Concrete Failure.

The birth of two more girls in Concrete, Colo., in the past month, with not a single boy born in the past four years, has added to the eugenic mystery which citizens are trying to solve. All of the men of Concrete are employed in the cement plants and people are endeavoring to show that the dust inhaled has something to do with the birth of girls.—Construction News.



Section of concrete pavement made with crushed granite aggregate, showing same immediately after the test.



Section of concrete pavement made with gravel aggregate, showing same at close of the test.

The Cement Maker's Test of Brick Paving

An Unbiased Report Made by an Engineering Journal on the Result of the "Detroit Determinator" at Recent Road Congress

By the Editor of "Engineering Record"

A Reprint from the November, 1913 Issue

The Oct. 21 issue of "Brick and Clay Record" contained a report of the so-called pavement material determinator used at the American Road Congress in Detroit, Mich., by the Universal Portland Cement Company "to prove the superiority of concrete." This article was written by a staff writer who attended the congress and who declared that the device had proved a boomerang to the cement makers, as it not only failed to prove it was expected to do, but "turned face about" and showed just what the vitrified paving block manufacturers contend that concrete will not wear and that vitrified paving block will.

DURING the American Road Congress at Detroit tests were made on concrete and brick pavements by means of the "determinator," a machine designed for the Department of Public Works of Detroit. A space 40 ft. square, being part of the exhibit space of the Universal Portland Cement Company, was prepared for the test, and was divided as follows: In half of the space a 1:1½:3 gravel-concrete pavement was laid by the Wayne County Highway Commission; in one-fourth of the remaining space crushed granite concrete and in the remaining quarter a brick pavement, composed of two sections similar in all respects except that one had a 1:5 mortar cushion and the other an ordinary sand cushion. The machine was started at noon on Monday, Sept. 29, and was stopped finally at noon on Saturday, Oct. 4, making in that time 19,315 revolutions. The results are shown by the photographs and are summarized briefly at the end of this article and in the editorial comment in this issue, to which attention is particularly directed for an estimate of the value of the test.

At the site of the exhibit at the corner of Second and Front streets the earth was excavated to a depth of several inches. A reinforced-concrete foundation slab was built over the whole area, and on this, as a subgrade, the pavements were constructed.

One-half of the area, a space 20 x 40 ft., was paved with concrete, built by a gang supplied by the Wayne County Highway Commission, using the materials, proportions, methods and tools utilized on the county highways. The coarse aggregate was screened, washed gravel, graded in size of pebbles from ¼ to 1½ in. This material is supplied to the Wayne County Highway Commission by Lennane Brothers, of Pleasant Lake, Ind. Its analysis will be found in Table 1.

The fine aggregate was washed sand, consisting of hard, silicious particles well graded in size from the finest to the largest particles, all passing a ¼-in. opening. This sand was also supplied by the Wayne County Highway Commission, and is also furnished by Lennane Brothers. The grading is given in Table 2.

Gravel and sand were measured in wheelbarrows after first instructing the laborers as to the amount of material for a measured load. The concrete proportions were 1 sack of cement, 1½ cu. ft. of sand and 3 cu. ft. of gravel. Universal Portland cement was used.

The concrete materials were mixed in an electrically driven ½-yd. batch mixer, and for each batch the mixing was continued for one minute after all materials, including water, had been placed in the mixer. This mixer turned 19 r.p.m. The concrete was mixed to such consistency that it would flow somewhat when deposited from the wheelbarrows. It could be shoveled about without running off the shovel to any extent, and after working down with the template and floating a very small amount of water appeared on the surface. The concrete was 7 in. thick.

Joint protection plates of the Baker type were placed against the forms which divided the concrete from the remaining part of the area to be paved, and a protected joint was made across the gravel-concrete pavement, dividing it into two sections, using the Baker plates.

As soon as deposited, the concrete was struck off with a heavy template resting on the side forms and moved back and forth across the surface, advancing a few inches forward at each move of the template. After compacting and molding to a truly plane surface in this manner the surface was finished with wooden floats from a bridge supported outside the edges of the concrete. The floating was done before the concrete had set up to the consistency common in sidewalk or floor construction, the purpose here being simply to remove irregularities in the surface and work down any coarse stones, leaving a gritty, rough surface. Finishing was completed in less than 2 hours after depositing concrete.

After hardening overnight the surface of the concrete was covered with sand and kept wet for a period of three weeks. The pavement was built on Aug. 17.

The concrete pavement built by R. D. Baker was laid Aug. 22. Crushed Wisconsin granite supplied by the Wisconsin Granite Company, of Chicago, Ill., in sizes graded uniformly from ¼ to 1½ in. was used as coarse aggregate. (See Table 3.) Sharp sand, supplied by the C. H. Little Company, of Detroit, obtained from Fleming Creek, Ypsilanti, Mich., was the fine aggregate used. The proportions were 1 sack cement, 1½ cu. ft. sand and 3 cu. ft. crushed granite. The sand analysis is given in Table 4.

The concrete was mixed and placed as described for the gravel concrete. A protected joint was made diagonally across the slab, the plates being placed with the Baker patent installing bar. This pavement was 7 in. thick.

BRICK PAVEMENT.

A standard vitrified brick pavement was laid in the remaining one-fourth of the exhibit space. Champion brick were supplied and laid by Mr. I. M. Adams, of the Detroit Vitrified Brick Company. In half of this space, or one-eighth of the circle, brick were laid on a 1:5 mortar bed. This was prepared by mixing the sand and Portland cement dry and spreading on the concrete base in the same manner as is the ordinary sand cushion. After the brick were laid water was applied from the surface and the mortar allowed to harden.

TABLE 1—GRANULOMETRIC ANALYSIS OF GRAVEL USED IN TEST PAVEMENT.

Sieve.	Per cent retained, by weight.	Sieve.	Per cent retained, by weight.
1¾ in.	0	No. 2	37.1
1¼ in.	9.1	No. 4	25.8
¾ in.	18.9	Through 4	9.1

Per cent voids, 32.4.

TABLE 2—GRANULOMETRIC ANALYSIS OF SAND USED IN GRAVEL—CONCRETE SECTION OF TEST PAVEMENT.

Sieve. No.	Per cent retained, by weight.	Sieve. No.	Per cent retained, by weight.
4	0.0	50	6.3
10	35.9	80	6.8
20	26.5	100	1.0
30	10.9	200	0.7
40	11.3	Through 200	0.6

Per cent silt, 2.30; per cent voids, 28.0; specific gravity, 2.65; strength of 1:3 briquettes (average of 3), at 3 days, 303 lb. per square inch, at 7 days, 358 lb.

The remainder of the brick were laid according to the specifications of the National Paving Brick Manufacturers' Association. A 1½-in. cushion of sand was spread over the concrete base to support the brick.

A 1:1 Portland cement grout was applied in the usual manner over both sections.

Champion block are 3½x4x9 in. in size, with lugs about ⅛ in. high on one side; corners are rounded to a 3/16-in. radius. The brick are a first-class vitrified shale paver, made at Corunna, Mich. A standard rattler test on samples of brick selected from this lot showed average losses of 34.7, 29.9 and 31.0 per cent.

The brick were carefully laid and a smooth surface was obtained without appreciable depressions or projections. A pounder was used in the ordinary manner and the surface was finished satisfactorily without the use of a roller. The surface was covered with sand and kept wet for a period of 7 days.

The paving determinator used in this test was designed for the Department of Public Works of Detroit by Mr. John C. McCabe, city boiler inspector.

The determinator consists of a central vertical column or pivot around which revolves a horizontal shaft having heavy cast-iron wheels on each end. The wheels are 48 in. in diameter, with rims 3 in. wide. The weight transmitted to the floor by each wheel is 1,650 lb. While the wheels remain at a constant distance apart, as they move around the central pivot the radius of one increases and that of the other decreases, so that each wheel travels over a path measuring 27 in. wide from inside to outside of wheels. The greatest wheel radius of the machine is 10 ft. 10 in.; the least radius of inside edge of wheel is 8 ft. 7 in., and it requires approximately 330 complete revolutions for a wheel to shift from the inside to the outside of the circular path.

To reproduce the wear due to rough-shod horses, each wheel is provided with five plungers, on the ends of which are metal plates shaped like the bottom of a horse's hoof, each plate having four steel calks. As the wheels revolve, these plates strike the surface of the pavement a heavy blow, regulated by means of a cam gear and springs. The blow was estimated in this test at 150 lb.

TABLE 3—GRANULOMETRIC ANALYSIS OF CRUSHED GRANITE USED IN TEST PAVEMENT.

Sieve.	Per cent retained, by weight.	Sieve.	Per cent retained, by weight.
1¾ in.	0.0	No. 2	29.5
1¼ in.	35.0	No. 4	7.2
¾ in.	28.3	Through No. 4	0.0

Per cent silt, 0; per cent voids, 45.4; specific gravity, 2.78.

A revolution counter was used to record the number of complete revolutions of the shaft about the central pivot—both wheels passing completely around the path in one counted revolution. A picture of the machine will be found in the Engineering Record of Jan. 25, 1913, page 105.

Table 4—Granulometric Analysis of Sand Used in Crushed-Granite Section of Test Pavement.

Sieve. No.	Per cent retained, by weight.	Sieve. No.	Per cent retained, by weight.
4	0.0	50	5.7
10	18.3	80	8.9
20	30.7	100	1.9
30	18.5	200	2.0
40	12.8	Through 200	1.1

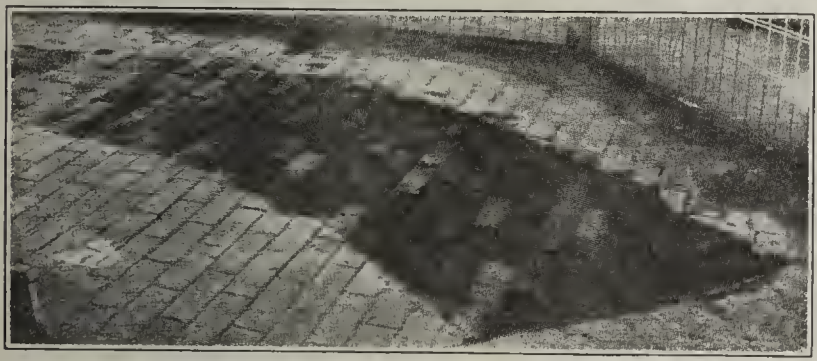
Per cent silt, 2.65; per cent voids, 30.0; specific gravity, 2.66; strength of 1:3 briquettes (average of 3), 3 days, 272 lb. per square inch, at 7 days, 350 lb.

Before the test was begun marks were placed on a circle inside the wheel track and levels taken at several points in the path to be traveled on radii through these marks. At the conclusion of the test readings were again taken on these points to determine the wear. These readings were made by members of the civil engineering faculty of the University of Michigan and will be used by them in a full report of the test to be rendered later.

After 19,315 revolutions the machine was stopped. The conditions of the various sections are shown in the photographs. The gravel concrete had worn badly and unevenly, as much as 1½ in. in place, while the granite concrete had shown only little wear, and that very even. The brick section laid on a mortar cushion was in excellent condition, while that on the sand cushion was beginning to go to pieces, as shown in the photograph. The darkening of the bricks in the photos is due to the fact that they had been wet before the pictures were taken.

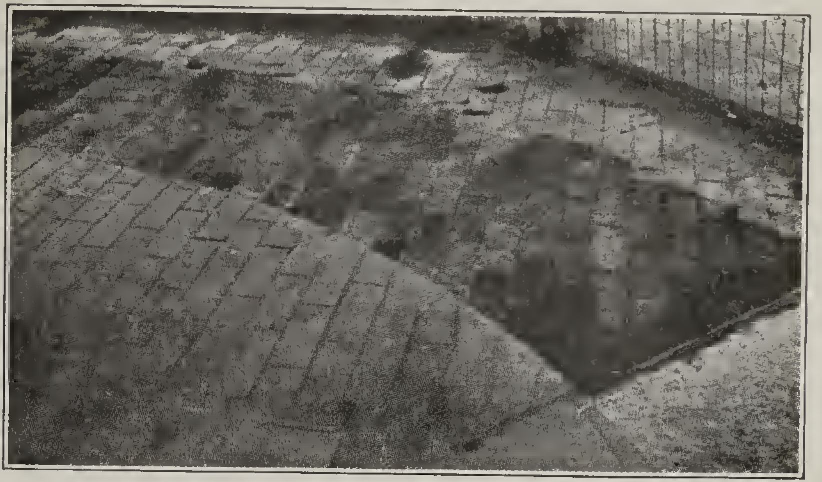
Commenting on the use of the "Determinator" the "Engineering Record" editorially says:

Probably the most interesting feature of the pavement test at the Road Congress, referred to editorially in this issue on page 450, was the contrast between the life of the two sections of brick pavement. They were alike in all respects—foundation, make of brick, kind of filler and date of laying—save only that in the one that endured the cushion was a 1:5 mortar, while in the other a plain sand cushion was used. Why the one should have stood up much better than the other is difficult to understand. Unquestionably the mortar bed tended to make the entire pavement—concrete base, cushion and brick—a thick monolith. Nevertheless one would expect the grout filler to hold the brick so rigidly that the difference in cushions would have but small influence. Anyone who has seen the wonderful single-course brick pavement standing as a 6-ft. cantilever, where a flood undermined the sub-base and tore out the concrete foundation, near Cleveland, would certainly expect the grout filler to render the cushion of less importance than was indicated in this test. Certainly the result warrants a careful trial of the lean-mortar cushion in practice.


Section of brick pavement laid on ordinary sand cushion, taken shortly after the test.

In another editorial the "Engineer Record" says:

As recounted elsewhere in this issue, accelerated tests were made of sample concrete and brick pavements at the Road Congress in Detroit. Two iron-shod wheels, reinforced with hammers simulating a horse's shoe, ground mercilessly for six days with the results shown in the photographs on pages 457 and 458. Some thoughts inspired by the ordeal are worthy of comment. The plain facts are that two of the four classes emerged from the test good pavements and that two were destroyed. The granite concrete and the brick set on a mortar cushion wore evenly and were in good condition; the gravel concrete had about given up the ghost, while the brick on a sand cushion had passed into the "bad-pavement" class. Comparisons, if any, should be made between the two that failed and the two that passed; in both cases the brick had the better of the argument. Quantitative comparisons of wear will be possible when the level readings taken by members of the civil engineering faculty of the University of Michigan become available. But having stated the conclusions in general it is pertinent to add some observations on the significance of the tests.


Section of brick pavement laid on 1:5 mortar cushion, taken directly after the test.

Frankly the "Engineering Record" believes that the public demonstration of the determinator was a mistake. It is well understood by investigators that accelerated tests have a place in determining the value of engineering materials and equipment, though close study and excellent judgment are needed for translating them into service values. Even then they must be taken with suspicion, and as to many materials, competent specialists agree that they give no rational indication of prospective value in service. The place, then, for accelerated tests is not in public, but in the calm, judicial atmosphere of the laboratory. Even granting that the determinator is more rational than the average accelerated test, its exhibition where laymen were invited to draw their own conclusions, without being furnished with the "conversion factors," so to speak, to enable them to estimate what these results meant when translated into pavement service, was a violation of good engineering sense.

It may be argued that on account of the fortuitous (?) outcome—one pavement of each principal type standing up and one failing—that at the worst the laymen could only conclude that some brick and some concrete pavements fail. But, first, this lacks definiteness and tells nothing not already known, and, secondly, is grossly erroneous, insofar as it condemns pavements which, when laid as well in practice as these were, have given excellent results.

How to Make Enamel Brick

Being a Few Notes on the Manufacturing Process With Some Investigations on Slips and Recipes Used by American Makers and Experiments With Clays

By R. T. Stull

Director Department of Ceramics, University of Illinois

There are only half a dozen enamel brick plants in the United States, and, until recently practically all the material used in this county was imported from England. The American manufacturer has been handicapped by the fact that he was forced to employ English clayworkers who zealously guarded their recipes and formulas and thus in a sense, kept down progress and maintained a veritable monopoly.

Gradually, however, our ceramists have, through research work, worked out the problem of manufacture and today it is a fact that American made enamel brick from American clays, are far superior to the importations and few English brick are brought into this country.

Prof. Stull, director of the Department of Ceramics at the University of Illinois, Urbana, Ill., probably has done more research work and achieved more for the American enamel brick maker than any other one person. The following article by Prof. Stull, is from a paper he read before the American Ceramic Society.

ASIDE from the contribution by Barringer in Volume V of the Transactions of the American Ceramic Society, very little literature can be found of material help to the prospective manufacturer of enamel brick.

Although the fundamental principles of ceramics apply to the manufacture of enamel brick, they have not been clearly pointed out in this line of business; besides, there are problems peculiar to the trade which need more investigation.

The majority of men in America, who are in charge of the manufacturing end, are of foreign birth. They have brought their experiences and recipes with them, and have gone through the painful experiences of applying them to our conditions. This has been largely responsible for the prevailing belief that "we must go abroad to get clays for our slips."* If all Europe should pass stringent laws prohibiting the exportation of her clays, it is not probable that the American white ware potters and enamel brick makers would go out of business, nor make any great sacrifices in the quality of their products.

Clays suitable for enamel brick bodies should possess low shrinkages, good bond, be free from warping and cracking, stand up well at Cone 4 or higher, and burn to a light color comparatively free from iron spots.

The plastic fireclays are well suited to this purpose. It is quite essential, however, to reduce their shrinkages by the addition of flint clay or grog. The majority of body mixes vary from 60 to 80 plastic and 40 to 20 non-plastic parts. Some clays will carry a small per cent of sand without material injury. One mixture which has been in use for several years is composed of 70 parts plastic clay, 20 parts grog, and 10 parts crushed sand stone.

Methods of Manufacture.—In general, two different processes of manufacture are recognized, viz., one fire and two fire. In both one and two fire ware, the methods of applying the veneer are practically the same, the distinguishing feature being that, in the two fire process, the brick are first biscuited at a low temperature before the veneer is applied. Quite recently mechanical appliances have been introduced which promise to make some radical changes in the manufacture of enamel brick. For the present work, the methods of manufacture will be divided into two general groups, according to the methods of application of the veneer.

I. Hand Dipping Process.—(a) Single Fire: 1. Dipping Stiff Mud Brick; 2. Dipping Leather Hard Brick; 3. Dipping Bone Dry Brick. (b) Two Fire: 1. Dipping Biscuited Brick.

II. Mechanical Veneering Process.—(a) Single Fire: 1. Veneering Stiff Mud Column and Wire Cutting.

A favorite method of making enamel brick in Europe is by dipping a stiff-mud wire-cut brick. The face of a first quality enamel brick must be as near perfect as it is possible to make it. Since the brick are not repressed, the die is watched with the greatest care, and frequently lined up to normal size in order to take up the wear.

It is important that the brick be cut straight. A method in vogue is to cut the column into blocks which are dipped, and after the slip has hardened sufficiently, the blocks are "squared" on a hand cutting table. This is also an effective way of removing the excess slip on the sides.

Although this method has not been exploited to any extent in America, it has many advantages well worth investigating:

1. Repressing and consequent flaking of the slip due to oil on the surface are avoided.
2. There is a better bond between slip and body since the two shrink together in drying.
3. The necessity of storing the brick until they reach leather-hard consistency is eliminated.

In the leather-hard method, the brick are allowed to harden by partial drying until nearly all drying shrinkage has ceased before they are dipped. The brick may be formed on a soft-mud machine, or "slush" molded by hand in wooden molds, hardened down to a stiff-mud consistency and re-pressed, or, more commonly, made stiff mud on a plunger or auger machine, wire cut, and re-pressed. Owing to the

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*Instead of "engobe" the writer prefers to use the word "slip" because it is the term universally understood by enamel brick makers.

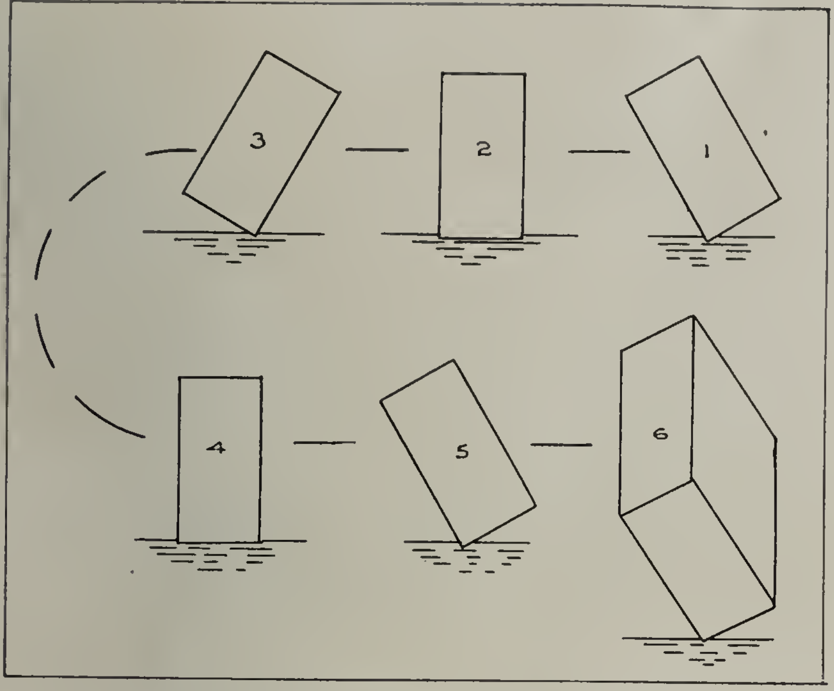

Fig. 1—Different Positions of Brick in Dipping.

variation in size and shape, the soft-mud machine method is to be recommended only where two grades of brick are to be made. By sorting the brick as they come from the re-press, those which are true in form and size can be used for enameling and the remainder burned for builders.

The process of slush molding and repressing by hand is very similar to that for hand-made fire brick, except that more care is taken in filling and dumping the molds and greater care exercised in repressing.

The advantages in repressing are that the brick can be "squared up," panelled and the firm's name stamped on the side. With the stiff-mud brick not subjected to the repress, the brick can be judiciously cored and the lettering stamped on the back side of the column by a roller.

A few plants are glazing bone dry brick. Although sold as enamel brick in some cases, they are in reality nothing more than glazed brick, and should be classed as such.

To the writer's knowledge, there is not a plant at the present time successfully making a white enamel brick by dipping a bone dry body in slip and glaze. It is doubtful whether this method will ever be a success, owing to difficulties encountered in cracking and flaking of the slip.

In the two fire process the brick may be made soft-mud repress, stiff-mud wire-cut, stiff-mud repress or dry-press process. The brick are first biscuited at heats ranging from Cone 08 to Cone 01, then dipped in slip and glaze and given the glost fire at Cones 3 to 9. A few plants making dry pressed front brick from fire clays are enamelling their culls, which are too soft for the market or off in color but otherwise having true faces.

Methods of Dipping.—In some cases the brick are given one dip in the slip and one in the glaze, but in most cases the brick are given two dips in the slip and one in the glaze. A factory which has been brought to the writer's notice sprays on the first coat and dips the second one. Two slips of different composition are sometimes employed, the first dip being made in a slip comparatively high in ball clay and correspondingly low in China clay or kaolin. Over this a second coat is applied composed of materials giving a much whiter surface.

The thickness of the slip is an important factor. It is essential that it be applied thick enough in order to form a smooth coating and to hide the character of the body underneath. In the two fire process the brick may be porous enough to take on a sufficient coating in one dip, but for stiff-mud and leather-hard bodies, one dip is seldom sufficient, except in cases where a more or less opaque glaze is applied over. The proper thickness of the slip under ordinary conditions is from three-hundredths to five-hundredths of an inch. Where the slip is thin, the differences in shrinkage and expansion of body and slip are balanced by the elasticity of the slip, thus preventing rupture. If the coating of slip is too thick, its shrinkage and expansive forces may cause cracking, crazing or flaking.

The glaze applied over the slip should be quite viscous so as to prevent excessive flow and beading along the edges, and to overcome the absorption of the glaze by the slip and the consequent vitrifying of the slip which would cause the dark color of the body to show through.

Defects Appearing After Dipping.

The principal defects which appear after dipping before the brick enter the kiln are:

1. Pinholes.
2. Flaking.
3. Cracking.

Pinholes may occur from four causes:

1. Using a freshly made slip.
2. Pinholes or cavities in the surface of the brick.
3. Dust on the face to be dipped.
4. Bad dipping.

1. The writer has seen pinholes appear repeatedly by dipping brick in a freshly made slip. After aging the slip for a short time, pinholes from this cause disappeared. A week's aging of the slip is usually sufficient. After dipping, the pinholes do not appear until the "water gloss" of the surface begins to disappear. Bubbles which appear on the surface break, leaving small cavities in the surface.

2. Air is entrapped in small cavities or pores in the dipped surface. As the water in the slip is absorbed by the brick, the air in these small cavities is forced out, passing up through the slip, thus causing pinholes.

3. In dipping a dusty surface, air is entrapped in films around the dust particles and in cavities between them. As the water in the slip slowly creeps over the surface of these

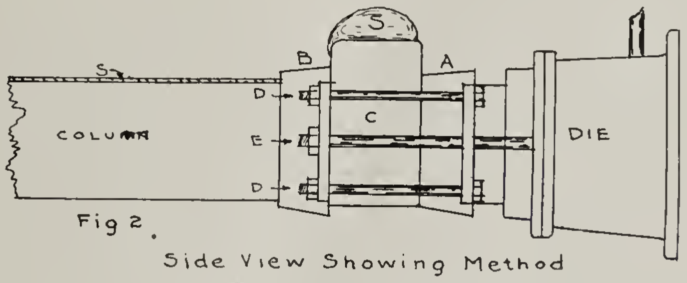

Fig 2.

Side View Showing Method Of Veneering Top Of Column.

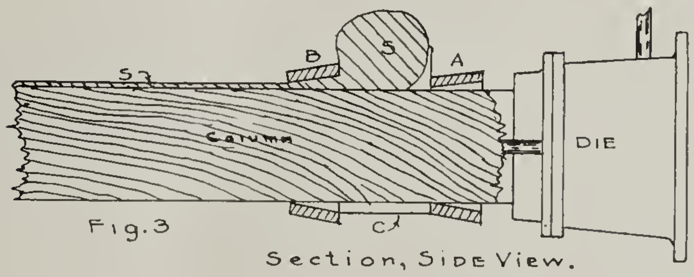

Fig. 3

Section, Side View.

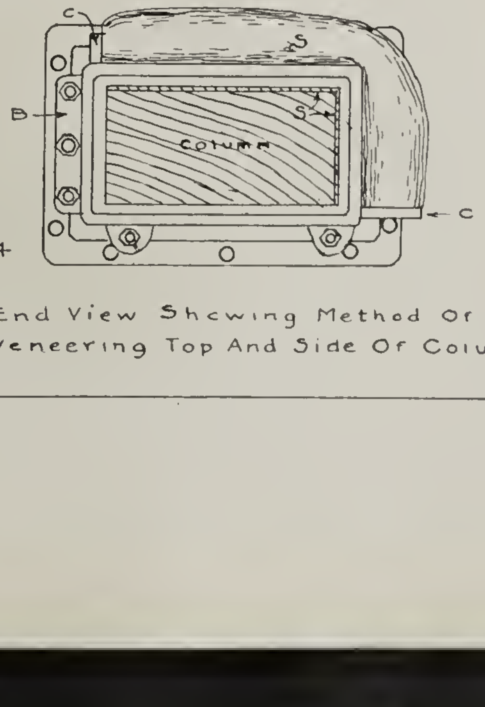

Fig. 4

End View Showing Method Of Veneering Top And Side Of Column.

particles, the air is released and rises to the surface. In order to overcome pinholes caused by dust or minute cavities in the surface, brick makers resort to "scrubbing;" i. e., the surfaces to be enameled are brushed over with a stiff brush dipped in water, or more commonly, in a slip diluted with water. Other recipes which have been in use are: water, slip and glue; water, slip and molasses; water, fire clay and white slip.

4. Air may be entrapped by bad dipping. This occurs if a flat surface of the brick meets the surface of the slip when first immersed. A good method of dipping is to hold the back of the brick in the palm of the hand with face to be dipped, down. By allowing one edge of the brick to first meet the surface of the slip as in position 1, the slip is washed across the face by a rocking motion through 2 to 3. Then by the reverse motion (without removing the brick from the slip), the brick is passed back through 4 to 5. The end of the brick farthest from the operator is then raised as in position 6, which allows the excess slip to run down the edge and leave at the corner as it is raised from the slip. The brick is then quickly inverted and slid onto a bench. The dipping should be done by an easy swinging motion to and fro without a halt in the operation. The time required for a single dip is from three to six seconds, and a careful dipper can perform the operation alternately right and left handed, getting very little slip over the edges.

Flaking or shelling of the slip is due to lack of bond. It may occur soon after dipping or may not appear until the brick are subjected to the fire. Lack of bond may be caused by oil or dust on the surface, or by unequal shrinkage of slip and body. It is most frequently caused by too low shrinkage of the slip, but in some cases it is caused by too high shrinkage of the slip. In the latter case cracking and flaking will appear on the same surface.

Scrubbing the surface before dipping not only prevents pinholes, but also assists adhesion by removing dust and oil which may cause an otherwise good slip to flake.

Slips too low in plastic clay, or slips too high in kaolin or China clay which are short or weak in character will cause flaking. Where flaking is due to low shrinkage, the remedy is to increase the per cent of plastic clay and decrease the non-plastic portion. Where cracking and flaking occur, reduce the per cent of clay and substitute part ball clay for China clay or kaolin.

The tendencies of ball clay are to increase shrinkage, impart greater adhesive power and render the slip more yielding or ductile by which it adjusts itself better to the brick, thus preventing rupture.

Some English recipes for slips require plaster of paris to overcome flaking. It is necessary in such cases to exercise care in burning, besides, the cause of rough, blistered and scummed glazes can frequently be traced to plaster in the slip. The use of plaster to prevent flaking is unnecessary, since good reliable slips can be had without it.

Cracking may be caused by: 1. Excessive shrinkage of the slip. 2. Too thick a coating of slip. 3. Too fine grinding of slip. 4. In dipping leather hard, allowing the brick to become too dry before dipping. 5. Using clays which are weak or have low tensile strength.

Cracking may be overcome by substituting a clay of low shrinkage for one of higher; or increasing the non-plastic portion and decreasing the plastic part, such as increasing flint and feldspar or Cornwall stone, or replacing part raw clay with calcined clay.

Blunging the slip instead of grinding is to be recommended. The use of a small quantity of carbonate of soda or borax is found to be beneficial to overcome cracking. The proper amounts of these soluble materials to use is an important factor and varies in different slips, hence the amount should be determined experimentally. Slips high in clay require more than slips low in clay.

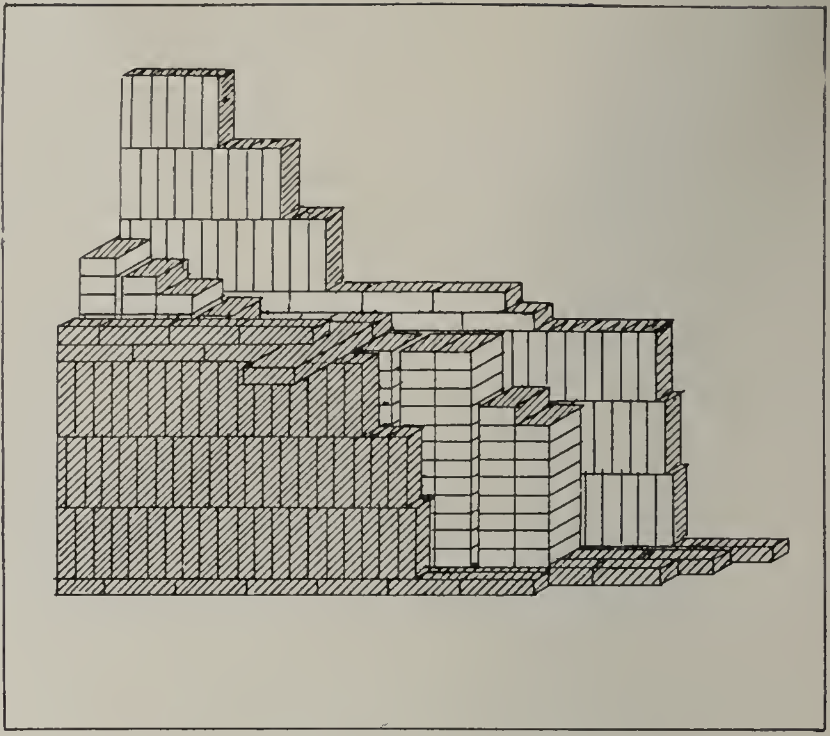

Fig. 5—Manner of Setting to Prevent Cracking in Firing.

Mechanical Methods of Applying Slip.—The most universal method of applying slip and glaze is by hand dipping and removing the surplus on the sides by scraping with a knife or scratching with a fine wire brush. Quite recently a leading enamel brick plant has been experimenting with a dipping machine similar in construction to that used for dipping wall tile. The machine is made somewhat larger, with a few minor changes in its construction in order to make it more suitable for its new purpose.

The automatic veneering process is one which has a great future. The process consists in veneering a column of stiff mud clay after it issues from a die. For this purpose a veneering device is attached to the end of the die or placed in front of it for spreading the slip in a layer about one-sixteenth of an inch thick upon the faces to be veneered.

Although there are four American patents on devices for veneering a column of clay, but one of these seems to be successful for the manufacture of enameled brick, viz., the Ramsay patent.

The veneering device consists of two rectangular frames A and B, called slickers, having two plates between as C, one at each side. These slickers are fastened together by two bolts at each side as DD. The apparatus is supported by the die and about one inch in front of it on two rods E, one at each side. Figs. 2 and 3 represent the apparatus rigged for making stretchers, in which case the top of the column is veneered. Fig. 4, a vertical section across the column, shows the arrangement for making quoins, in which case the top and one side of the column are veneered. The same principle is used for making bull nose and other shapes.

"A" is the surface preparing slicker having the same inside dimensions as the delivery end of the die. "B" is the slip slicker and is five sixty-fourths of an inch larger than the surface preparing slicker at all points where the slip is be applied to the column. "S," the slip which is pugged to about the same consistency as clay used for pressing white ware, is placed upon the column between A and B. As the column moves forward the slip adheres to it and rolls over and over, unwinding as it were, and is spread in a coating about one-sixteenth of an inch in thickness by the slip slicker "B."

The column is cut into brick on a hand cutting table of special design and dried on a hot floor. The bricks are loaded on trucks and the glaze applied by a large sprayer having the air and glaze under a pressure of forty to sixty pounds. The brick are then set and burned single fire.

Setting.—Of the three methods of burning, viz., open fire, burning in muffles and burning in saggers, the open fire method is most economical but requires considerable care and skill in setting. Some brick makers set the brick in piers, but the writer prefers setting in benches extending across the kiln. In two fire ware the brick may be set on the flat as described by Barringer*, but for single fire ware this method causes considerable loss in cracking owing to shrinkage. In order to overcome this difficulty, the stretchers on the outside of the benches are set on end and shapes set flat in the middle in piers. (Fig. 5.)

In the single fire method the brick should go into the kiln bone dry. In the writer's experience, brick which were set wet frequently came out with a dry, rough surface as though the glaze were underfired. At other times the glaze would be blistered or badly scummed. These brick were called by the workmen "steamed brick." Repeated burning of these brick made no appreciable difference in their appearance.

It is probable that these brick being wet, took up sulphur dioxide from the kiln gases, which in turn oxidized to sulphuric acid. This naturally would combine with lime and zinc oxide present in the glaze, and since the kilns were burned oxidizing throughout, the sulphates would naturally remain as such.

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*Trans. A. C. S., Vol. V, p. 273.

Design of an Economic Furnace for Tunnel Drying

By S. C. Karzen*

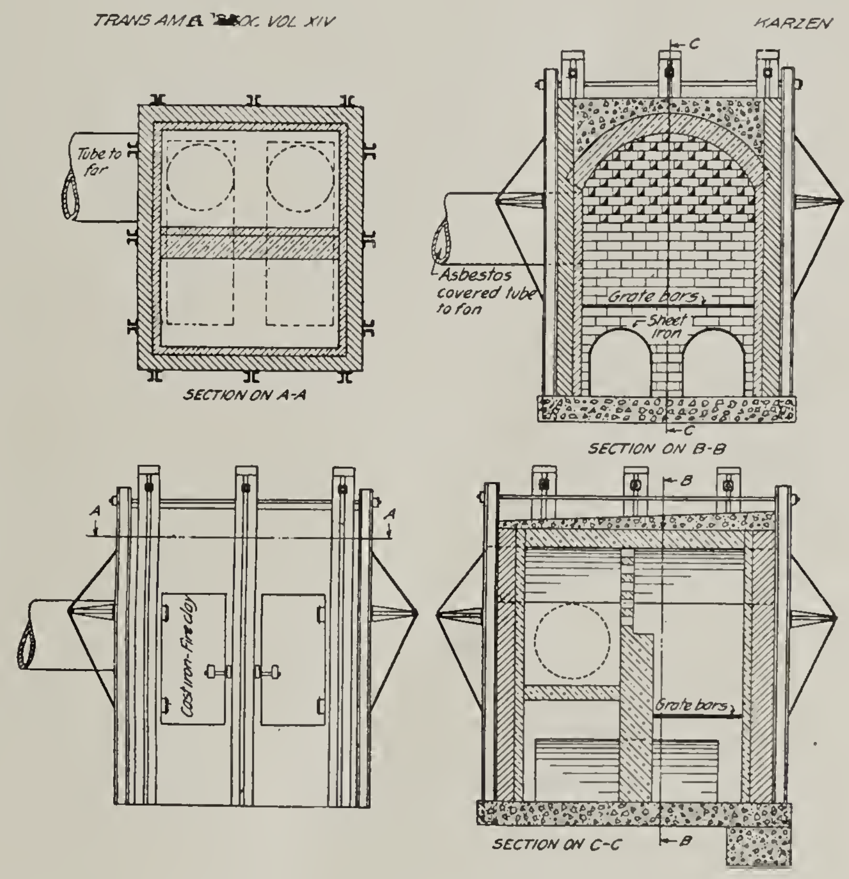
THE majority of brick plants at the present time use continuous tunnel dryers, the drying being accomplished by waste heat obtained from the kilns. It happens very often that the waste heat is insufficient to do the necessary drying in which case an accessory in the shape of a furnace is a necessity. It is for such systems that this furnace can be used.

The furnace, as designed, is intended to burn cord wood in 4'0" lengths. The design can easily be changed and the grate area reduced where any other fuel is to be used.

The ordinary furnace is one which obtains the air necessary for combustion from the atmosphere through the ash pits. This, of course, means the heating up of air from atmospheric temperature to a temperature at which it can be used in the dryer. The furnace here shown is designed to utilize the waste heat passing through the duct to support combustion. Since the air passing through the duct is already at a temperature closely approaching the required temperature, only a small amount of fuel is necessary to raise the temperature to the required point.

Generally, furnaces of this type are placed very close to the fan house, the suction of the fan furnishing the draft. In this case, the furnace is connected to the fan direct by means of an asbestos covered tube. The furnace is placed, as shown, directly over the waste heat air duct, having two openings leading directly to it. Receivers, closed at one end and open at the other, are placed over these holes so as to guide the air to the spot where it proves most efficient.

The suction of the fan, now acting as the draft, draws the air up through these receivers into the ash pit and up through the grate bars, thus furnishing the air for combustion. The gases then pass on through the checker work, for better mixing of air with volatile unconsumed gases, into the combustion chamber where final combustion takes place. The products of combustion plus the heated air then pass into the fan through the tube.



The tube itself may be dampered. A damper can be placed in the large air duct also. By manipulation of these dampers, the draft may be increased at will in either the air duct or through the furnace. An iron damper may also be placed over each hole connecting the furnace and duct, in case it should be found that the cross-section of openings are too great. No trouble should be encountered in forcing the air up through the furnace if these dampers be in place.

The dryer will suffer to a certain extent, perhaps, from soot and smoke. But the combustion chamber and checker work should cure this to a certain extent, and the fuel itself would not be fed in such great quantities when using such a furnace as would otherwise be required.

The furnace has never been tested. As stated before, it was merely the idea involved that, I hope, will prove of benefit.

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*A paper before the American Ceramic Society.

How Cox Got Into the Game

BEING THE STORY OF A YOUNG MAN WHO FELL HEIR TO A RUN-DOWN CLAY PLANT

By Iverson C. Wells

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(*Continued*)

WHEN the detective I had employed to help me prove Simpson innocent of Sawyer's death followed me into the room, after telling me he had found some important clew, I could barely wait for the information I knew he had to impart.

Up until this moment I had never doubted Simpson's guilt. It is true whatever evidence there was had been circumstantial but it was of such a strong nature I could not see how it could be overcome.

There were the several petty quarrels between the two, Sawyer's open antagonism to the young ceramist, and finally the fight the afternoon of the murder. Then, there was the shooting of Sawyer in front of my home, following Simpson's threat that afternoon of "getting even" with him, and the retreating figure of someone running in the direction of Simpson's home.

Added to these strong circumstantial evidences of Simpson's guilt did not the sheriff pick up a small memorandum book that belonged to Simpson near the scene of the tragedy?

I turned to the detective with a look of wonderment.

"That lad did not kill Sawyer," he said decisively. "He is as innocent of that crime as you are."

"I sincerely hope so, Rogers, God knows I do!"

Briefly here is the detective's story:

Immediately after I left Mauryville that morning for Pressville to confer with Steinway about the additional equipment, Rogers, under the guise of a laborer at my plant who was seeking a place to board nearby, applied at one of the men's houses. The workman's wife was a garrulous woman and spent most of her spare time talking about her neighbors.

One of the choice morsels of neighborhood gossip she imparted to Rogers was about the family of the Italian who had attempted to set fire to my plant a few weeks prior and whom Sawyer had discovered and gave chase to in the darkness. This Italian, it will be recalled, had been discharged by Sawyer and refused re-employment later. He was a heavy drinker and a poor provider. Desperate because of his loss of employment he sought revenge.

By the merest chance I obtained his confession, felt sorry for him, gave him back his employment and proceeded to forget him in the multitude of business duties that were thrust on me.

Sawyer, however, had not. He was of a vindictive nature and never approved of my reinstating the Italian in his former employment. One day, just a week before Sawyer was shot from ambush, the old superintendent found the Italian missing from his regular duties and ascertained he was "off on a spree." When the Italian returned for work a few days later he discharged him again. For three days he was on a spree and then he disappeared.

These facts were given Rogers, the detective.

"It's a sorry plight he's left his family in, too," volunteered the woman. "There's not a bite in the house to eat and a barn full of children. If it wasn't for the neighbors they'd starve."

Rogers said he got to thinking. Already, from his impression gained of Simpson as he talked to him in his cell, he had made up his mind that the young ceramist was innocent despite the overwhelming odds against him.

"My room window looked out from the rear of the house," said Rogers. "I was sitting at the window early this evening just after supper and was thinking over this matter. I couldn't get that Dago out of my mind. It was growing pretty dark and I was on the point of lighting a lamp when I saw a dark shadow skulking through the yard next door. The figure acted rather suspiciously and I strained my eyes to watch its movements.

"Cautiously the dimly outlined figure approached the rear of the house next door and, after a pause, knocked. It was some time before the raps attracted the attention of the Italian's wife. I saw the door open and in the sudden flood of light that fell on the figure on the steps I saw it was that of an undersized man—an Italian—and he answered the description of the man that had disappeared the night of Sawyer's murder.

"The fellow was unkempt. His clothes were in tatters and he was the most abject looking man I believe I had ever seen.

"When the woman opened the door and saw his feverish eyes she stepped back in startled recognition. The Italian started to pass through the door.

"No! No!" she cried. "You left me and the children to starve. You go!"

"With that she slammed the door in his face. The next moment he had placed his shoulder to the door and burst the frail lock that held it. With a bound he was in the little dingy room and the door closed behind him.

"I got a vantage point at a window and peeped into the room. The wife was huddled in a corner with her children. She was silent. The Italian was seated across from her and he was pouring forth a narrative in his native tongue. The woman just listened.

"I lost no time in placing a guard around the house and had just got my men located when I learned you had returned from Pressville and hurried over here to tell you of my suspicions."

I listened to what Rogers had to say without interruption but I could not conceal my disappointment.

"That does not prove Simpson's innocence or the Italian's guilt," I replied somewhat testily. "I thought you had discovered something."

"I neglected to say to you that I overheard Sawyer's name mentioned several times during the Italian conversation with his wife and that each time he mentioned it he looked furtively around as if he was afraid someone was about to seize him. Once or twice I heard him say 'I kill him,' although I could make no connection between that assertion and his mention of Sawyer's name, because most of his conversation was in Italian."

We hurried out and got Simpson's attorney and went to the Italian's home. One of the guards on duty said that he was evidently preparing to flee, as his wife was packing what few clothes he had in a small valise and the Italian was standing impatiently by.

We rapped on the front door. There was no answer at first, but there was a skuffle. The next moment we heard a door open at the rear and an oath in Italian. The fellow had attempted to escape that way and ran into the arms of two of our men. We took the poor fellow back into the house, but it required the services of three able-bodied men to hold him as he struggled to free himself.

"Me no keel him! Me no keel him!" he exclaimed.

Rogers took hold of the fellow and put him through the third degree. It is not necessary to go into details, suffice it to say that before another hour the Italian broke completely down and confessed having killed Sawyer.

No sooner had we obtained this information than I hurried to the judge of the criminal court and told him of the confession and asked for Simpson's release. It was near midnight before we could satisfy the court with the facts. He refused even then to give Simpson absolute freedom, letting him out of jail on bond with the charge of murder still hanging over him. This, I was informed, however, suggested nothing as we would have to wait until the regular term of court before the indictment against him could be quashed.

It was a joyous household at the Widow Simpson's that night and I did not tarry long, assuring Simpson I would see him early the next day.

The following morning I was up early making preparations for the arrival of DeJones, the engineer, and the salesman from the Steinway Machinery Company. As I left the house a messenger handed me a telegram. It read:

> Have decided not to extend favor asked of me. It is unbusinesslike and asking too much. Sorry.
> (Signed) H. L. Steinway.

I read and reread the typewritten words. Slowly a great lump rose in my throat. Tearing the crumpled message into tiny bits I retraced my steps into the house. Mother met me at the door. She evidently saw from my face that something had happened and looked at me inquiringly as she placed her arms about my shoulders.

(To be Continued in the Jan. 6 Issue.)

New Methods and Processes

A Department of Technology Wherein Recent Experiments and Discoveries Are Exploited for the Benefit of the Clayworker Who Wishes to Keep Abreast of the Times

Edited by

Charles S. Kinnison

Ceramic Chemist, United States Bureau of Standards, Department of Ceramics

Contributing Editors: Prof. Charles F. Binns, Ellis Lovejoy, C. E., Anton Vogt, C. E.

A Simple Gas Producer

By E. Schmatolla

THERE are many manufacturers and men operating furnaces which consume large quantities of coal, who have wrong ideas about gas producers and gas-firing, and who believe that a gas producer is a very complicated and costly machine similar to those used for making illuminating gas.

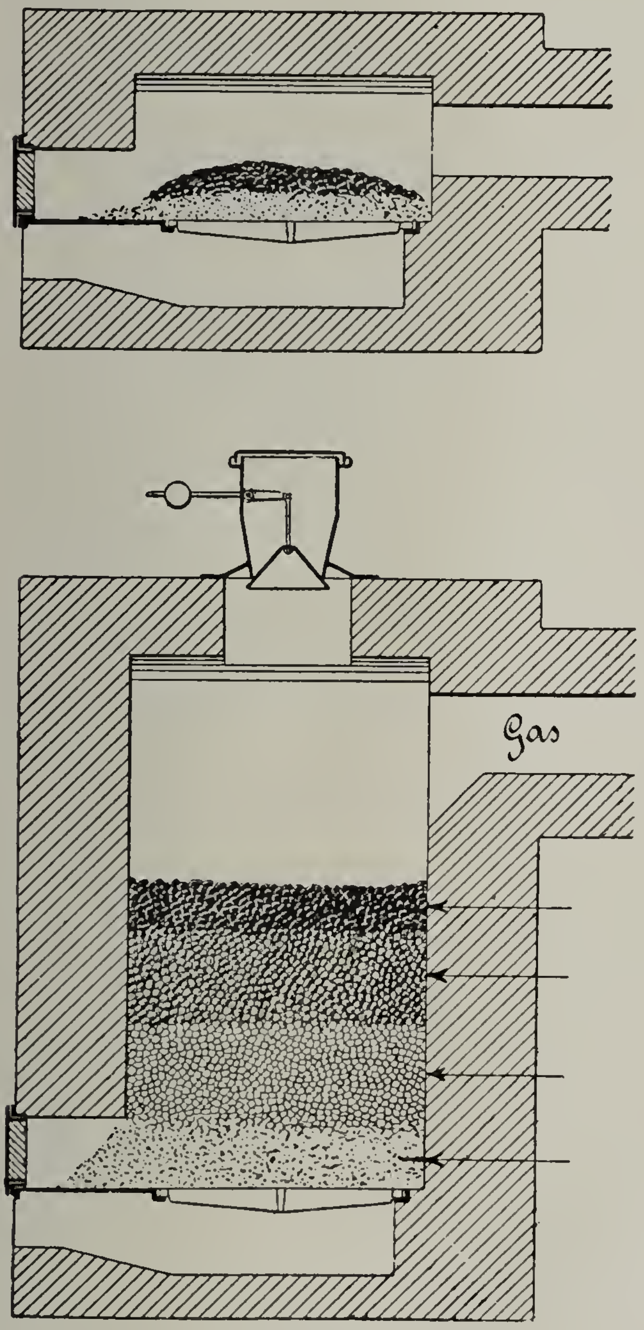

Figure 1.

To make it clear to everybody what a gas producer (particularly one for natural draft) is, how simple its construction is, and how easy and inexpensive it is to build one, the author has drawn two illustrations (Fig. 1), the upper showing an ordinary grate furnace for direct coal firing, the lower a gas producer (which the reader may imagine has been built by remodeling the above shown ordinary furnace). A comparison of the two sketches shows that the gas producer is very similar to the ordinary furnace, the main difference being the height or the distance between the grate and the flue, through which the flame or gas is leaving the furnace or producer chamber. This distance or height, which is about ten or more feet in the gas producer, allows it to keep on the grate a thick layer of coal (or

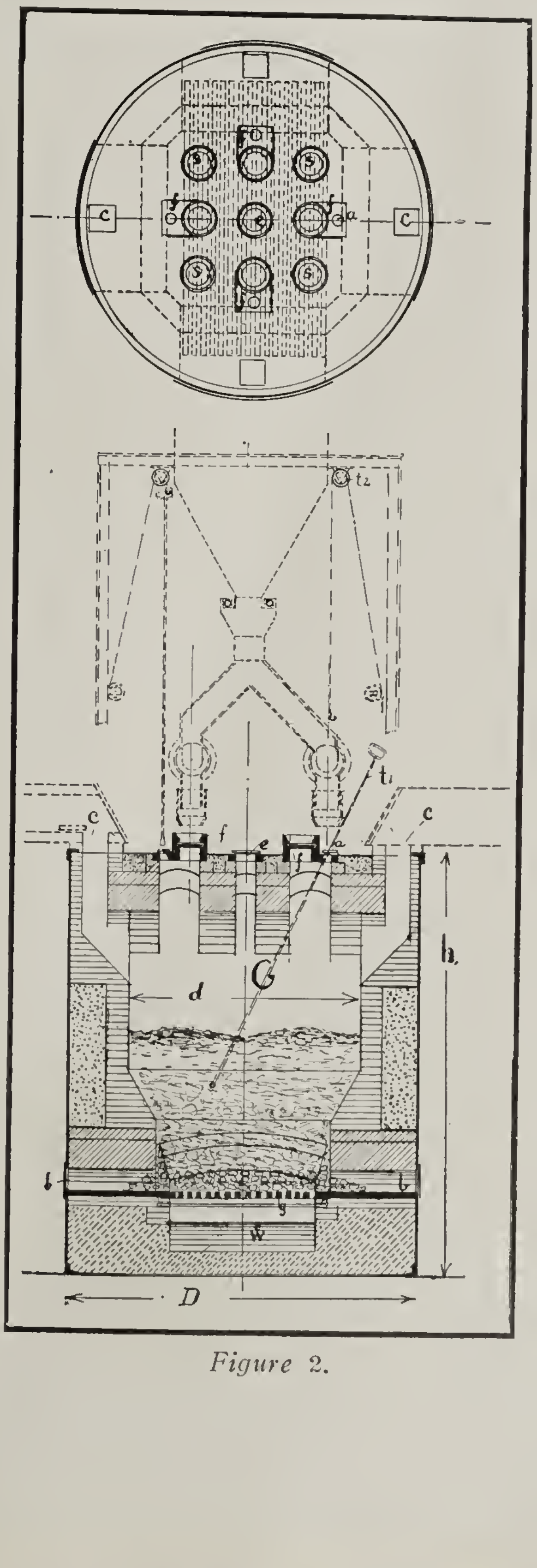

Figure 2.

other fuel), and gives the gas producer a shape similar to a chimney stack.

The chemical process by which the gas is formed in such a producer or generator is also very simple. Suppose there is a fuel bed of four feet on top of the fire grate and that this bed is kept up to the same thickness by adding coal in equal intervals of, for instance, each half hour through the feeding hopper.

The air, which enters the gas producer through the spaces between the grate bars, consumes the combustible part of the fuel, the carbon forming carbonic dioxide and leaving the mineral rest (ashes and clinkers) on the grate.

By the combustion the temperature above the grate is raised to about 2,300 to 2,500 degrees F. (1,200 to 1,400 centigrades). Therefore, the gases of combustion, in rising by their buoyancy, are compelled to pass through a thick layer of very hot carbon, which decomposes the carbonic dioxide, transforming it by chemical reduction into carbonic monoxide gas (CO) which is a combustible gas.

This process of reduction or chemical recomposition consumes heat, and, therefore, the temperature of the fuel-bed decreases by and by in the upper layer. But the gas is hot enough to transform the coal into coke (or if wood is the fuel, into charcoal), driving out of the fuel the hydrogen and hydrocarbon (illuminating and marsh gas).

Most of the American and English soft coals contain between 30 to 40 and more per cent of this volatile matter, and it is easy to understand that the development of these gases add to the heating efficiency and to the pressure of the gas, which escapes from the gas producer.

It will be understood from the above, that producer gas, which is made in such a gas producer from bituminous or soft coal, will contain as combustible component carbonmonoxide, hydrogen, and hydrocarbonic gases (illuminating and marsh gas), besides the non-combustible components, nitrogen from the air and some carbondioxide gas, which has escaped decomposition.

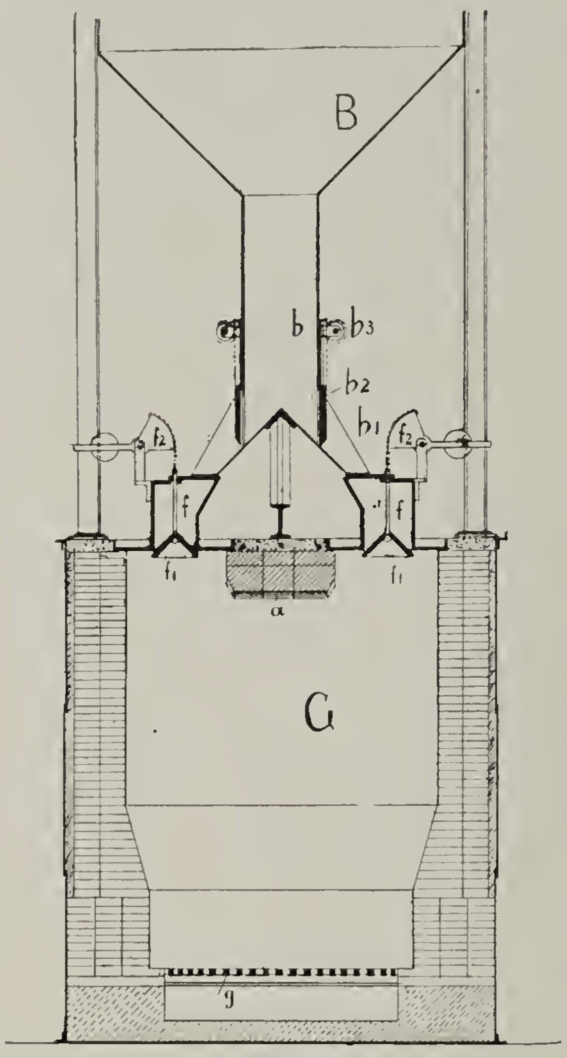

Figure 3.

The better the producer operates, the smaller will be the percentage of carbondioxide, and it should be less than 5 per cent (between 1 and 3 per cent), if high temperatures are to be obtained.

The producer gas generated from coal leaves the generator with a temperature between 1,000 and 1,500 degrees and at this temperature contains the tar driven out from the coal in form of steam or not permanent gas. If the gas has to pass through long flues to the kiln, a double loss may result, first by losing a part of the heat, which is contained in the gas, and, second, the more important loss of the liquid hydrocarbon compounds contained in the tar which condenses at lower temperature.

Bituminous coal, particularly most American soft coal, when thrown into a hot furnace or a gas-producer, gets soft and forms a pie which covers the surface of the fuel-bed and obstrects the draft. Therefore, it is a mistake to equip a gas producer for such a fuel with a large central feeder, which spreads the coal all over the surface of the fuelbed and covers it completely with green coal and chokes the draft. Such a gas-producer cannot work on natural draft and always, also on forced draft, will give a gas varying in temperature, quality and quantity.

Realizing this fact years ago the author built a gas-producer for bituminous coal with a series or circle of smaller feeders, each of which covered only a part or section of the surface of the fuelbed.

The soft pie of bituminous coal, after a few minutes, forms a hard cake of coke in the heat which cracks and easily can be broken into small lumps by means of a poker bar (t1, elevation of Fig. 2) and after that does not obstruct the draft.

If the bituminous coal is fed alternately and in small quantities on various parts of the fuelbed surface the gas and the draft will remain uniform and strong and it will be easy to break the cakes of coke, which are smaller and thinner, into lumps.

Such an improved gas-producer, designed by the author for gasifying bituminous coal on natural draft, is shown

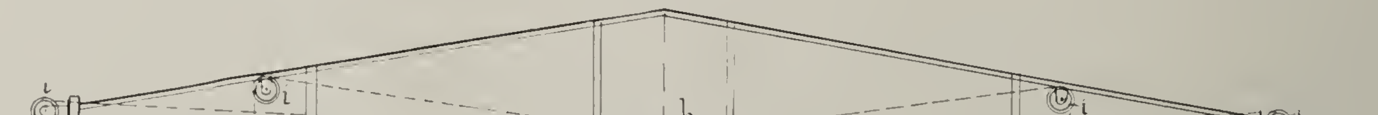

Figure 4.

by the Fig. 2 in plan and elevation. To save labor in feeding the coal through the small openings f, a coal bin may be arranged above the gas producer, equipped with revolving spouts, indicated by dotted lines.

A similar gas producer is shown in Fig. 3, having four feeders (f) fed from the coal-bin through a chute (b) by moving dampers (b2) which can be done by one stroke of a lever. The feeders have spreading cones (f1) hanging on levers (f2), and spread the coal only over one quarter of the surface of the fuelbed at one time, leaving the other three quarters open for the draft.

The next feeder gets its charge after another quarter of an hour and the feeders may be marked 1, 2, 3, 4 and fed at the first, second, third and fourth quarter of the hour accordingly. Between feeding the fuelbed and the clinkers, which form on the grate, these should be punched by an iron or steel bar every hour, or more often, as the coal requires. For drawing out the hot bars, cables and pulleys (t2) should be arranged above the gas producer as shown in Fig. 2.

Such a gas producer having an outside diameter of about twelve feet (D=12′ h=15′) can gasify at least 10,000 lbs. coal on natural draft. For goods which require high temperature a very rich gas can be made and for goods which cannot stand so high a temperature a gas can be made which contains more carbonic acid but has a larger volume, so giving much flame without high temperature. This can be done easily in a gas producer of the design shown by working either with a high or a low bed of fuel.

Screenings or slack can be gasified in this gas producer but are not recommended where the freight is high on the fuel.

Steam and forced draft are not needed and not recommended by the author for gasifying soft coal but water should be kept permanently under the grate which naturally develops steam, the latter cooling the grates, making the clinkers soft, and forming water gas.

The combination of such a gas producer with a continuous gas kiln is shown in Fig. 4 in elevation and plan. This kiln is of improved design particularly adapted to American conditions.

Continuous gas kilns for burning bricks and other shaped clay-products which are generally used in Germany and other countries, consist of a series or battery of burning chambers which all are connected by a long gas main and many branch flues with one or more gas producers. The walls of these kilns are very thick, which makes the plant very expensive and takes a very long time to cool and heat up again. Therefore, a continuously fired battery must consist of at least twelve chambers. On account of the long gas flues there is a very considerable loss of heat between the gas producer and the burning chambers.

By the improved arrangement of the gas kiln shown in elevation and plan in Fig. 4 the above mentioned disadvan-

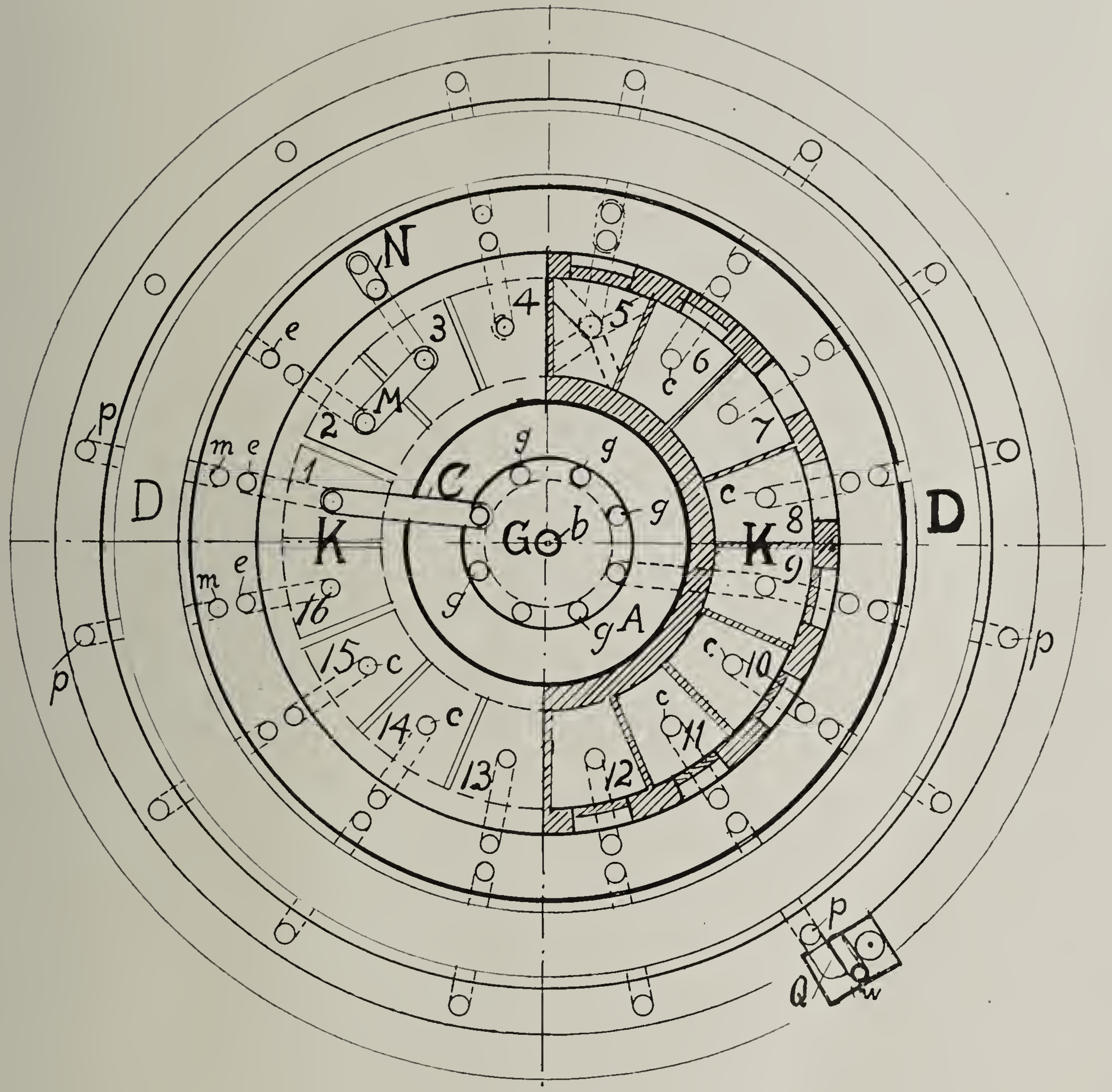

Figure 5.

tages are avoided and a great saving in building and operation is secured. This is achieved by arranging the gas producer (G) in the center of an annular kiln (K) with an open and sufficiently wide air space (A) between the kiln and the gas producer. Further, by building the two circular walls of the kiln (K) of steel plates, only, lined with fire brick with a thin elastic packing between steel shell and lining, which arrangement allows to connect the outlets (g) of the gas producer (G) with the gas inlets (c) of the kiln (K) by means of short and straight, gas flues (C). The latter can be movable on a circular rail (r) by means of pulleys or rollers (r1) and bring the gas on the shortest possible way from the gas producer (G) to each of the sixteen burning chambers, only one or two getting the gas at the same time.

The gas inlet flues are arranged in the roof of each burning chamber and have branches (c2) for distributing the gas evenly above the whole area of the chamber and the air for combustion is admitted either from outside immediately above the gas inlet branches or from another already burnt and cooling chamber by means of the flues a controlled by dampers (s1).

This arrangement allows one to burn goods at low or high temperature as required by the chemical composition of the material or the character of the goods to be burnt.

The flame is drawn downward between the goods and finds in the bottom of the chamber flues (a) branched as the topflues are. These bottomflues can be connected either with the next chamber by opening dampers (v1) or with the main flue (nD) which discharges the waste gas to the chimney. Instead of the latter it may be better to use an exhauster (Q) mounted with a motor on a car (w), movable on rails as indicated in Fig. 4.

For completely utilizing the waste heat an annular drying chamber (D) may be arranged between the exhauster, the latter drawing the waste through flues (n) immediately under the thin bottom of the circular drying chamber (D), which may consist of steelplates for the bottom, two walls and a cover of plate of boards.

In the arrangement shown on the plan the gas is admitted on the left hand side to chamber No. 1 of the kiln and the flame is drawn through the bottom flues to chamber No. 2 and from there through the top flues and a connecting movable pipe (M) to chamber No. 3, the bottom flues of which are connected by a short movable pipe (N), covering thhe openings (e and m) with the flue (n) and the latter by a pipe (q) with the exhauster (Q). Another series of chambers with each other are not shown very clearly as there are many, well known and described in books.

To save labor a coal bin is arranged above the gas producer connected with the feeders (f) of the gas producer by a chute (B) and a revolving hoisting engine is put on roller bearings above the center which can hoist or lower material from or to any point of the drying floors of the kiln house, where pulleys (i) are attached.

Drain Tile in Farm Land Prevents Erosion

Can the American farmer produce all the foodstuffs needed? If he does he will have to devote time to more intensive farming and a more thorough utilization of the growing power of the ground. The ground water is the most essential constituent of the soil, because solution circulation, and organic assimilation are dependent on water. All the organisms and tissues are made up of this solvent water and it constitutes a large percentage of the bodies and food and animals.

The question of the amount or ratio of ground water in the soil is a vital one. If it is excessive, it makes a sodden mass, sticky and wet, but inclined to bake when dry, so there is no possible absorption further into it and it sends on the water that falls on it to erode easy slopes. The erosion begins on the farm and should be remedied there.

Deep cultivation tends to absorb the product of each rainfall and reduce the run off. Deep cultivation brings up fresh earth salts to the shorter rootlets, but carries down the humus and mulch to thicken the soil and feed the deepest roots.

In flat-lying fields and tenacious soils tile drainage is the best method of relieving the farm from the danger of too great a run-off. Deep drainage permits both the soil and sub-soil to crumble and disintegrate and through mechanical changes to become friable and capable of taking on and holding the right amount of moisture for plant growth while the water runs out through the drain tiling is clear without carrying the soil with it and therefore without erosion.

You will observe there are two points here, one is the benefits derived of farm drainage to the growing crop itself and the other is preserving the soil and farm by the prevention of erosion.

Many a farm has been ruined by surface ditching and by the lack of drainage, the hillsides starting to wash and all the soil being carried down to the low ground. From there, through branches into creeks and down creeks into rivers. It is carrying away of soil from the upper lands which makes the richness of the river bottom lands that are annually inundated. It is good for the river bottom farmer but it is hard for the ones in the upperlands.

Fortunately there is a remedy and that is tile drainage. The farmer can underdrain the land so that there will not be so much surface erosion and while so doing he benefits the land by making it more porous and more apt to absorb moisture deeper into the ground during the Spring. This will carry it through the crop-growing season to supply the roots of all the vegetation through the dry months better than it will be practical to supply them from the natural soil, because the ground without this under tile drainage packs, in the course of time, until it will not take up water and hold it for the Summer needs.

Tile drainage and deep plowing will prove that they are safeguards against drought during the long stages of the Summer.

Bricklayers Inaugurate Pension Fund.

An old age pension and disability fund will be inaugurated by the Bricklayers, Masons and Plasterers' International Union of America in 1914. The fund will be maintained by weekly assessments of 25c on each member of the organization. Each member entitled to draw on the fund will draw $5 a week, the payments to be made monthly.

Pensions will be allowed any member who has reached the age of 60 years and has been in good standing in the Union for 20 years, if he is unable to obtain sustaining employment, and to any member who has been in good standing for 10 years and has become incapacitated for work by accident or ill-health not brought on by his own improper conduct. The widow of a beneficiary also may obtain the continuance of the pension if she is without other means of support.

Questions and Answers

A Department for the Solution of the Knotty Problems Confronting the Clay Worker

This department was inaugurated to be of material benefit to the readers of "Brick and Clay Record" and no charge is made for the service given. The advice of the world's recognized authorities in ceramics is offered to clayworkers who are invited to avail themselves of the opportunity to have their problems solved here. Should a reply be desired by letter enclose a stamped and addressed envelope for reply.

ANSWERS BY OUR READERS

An Ohio subscriber suggests "190 Pennsylvania" get in communication with the Aluminum Company of America, Pittsburgh, Pa. Our Pennsylvania inquirer stated he had a white clay that had burned to 3,500 degrees without showing any effect and wanted the address of some alumina reduction plant, believing he could interest the proprietors in his clay. Our Ohio friend further says that most of the raw material used by the Pittsburgh company is shipped from Georgia.

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200 England.—A. B. Searle, Sheffield, Eng., writes: "If your correspondent in your October 7 issue, page 691, who inquires about a clay-washing machine, will write to us, we shall be pleased to give him all the information he requires about the machine you illustrated."

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228 Missouri.—E. Schmatolla, 150 Nassau St., New York, answering this query in the November 18 issue says: "Silica brick can be made from flint silica if it is pure enough. It may also be used for making sand lime brick."

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229 New York.—E. Schmatolla, answering this question in the November 18 issue says: "The best controlling device I know of would be a CO_2 recorder which can be put up even in the bed room of the superintendent and connected with the kiln. An alarm clock probably can be combined with this device which sounds when the combustion gets poor."

George W. Beam, Box 66, Abbotsford, B. C., Canada, writes: "In your Questions and Answers Department, Oct. 21, No. 191, British Columbia, I note your correspondent wants data on oil burning processes for brick. If you will kindly refer the person to me I shall be very glad to give him the information he asks for in your paper. I am situated only 50 miles from Vancouver and it probably would save him a trip to Chicago."

Otto Pommer, Montmorency East, Quebec, Canada, who replied to Pennsylvania 177 in the Dec. 2 issue writes further on the same subject. Our correspondent had difficulty with scum on his brick and also failed to raise the heat in his Younghren Producer Gas Kiln higher than 1,700 or 1,800 degrees which was not sufficient for paving block and to get the color desired. Mr. Pommer answered the first question in the Dec. 2 issue. Here is his reply to the second: "You do not state whether this is a chamber or a tunnel-type kiln, but in both types you easily should reach the temperature for pavers which is usually 2,000 to 2,200 degrees Fahrenheit. The gas tunnel kiln will give a higher temperature than the gas chamber kiln. The various flues take up heat and the brick to be burned are not so easily pre-heated as in the tunnel type. You should see that there is a constant gas supply. Take care, also, of gas production and especial attention must be paid to the chambers, before the fires are preheated. On the other hand a gas kiln must be observed and studied in each case as an individual case. Any advice from this distance may do more harm than good."

Jesse Jones, 104 Massey Lane, Wacon, Ga., says: I saw in the Oct. 21 issue where 177 Pennsylvania has trouble with his kiln and whitewash on his brick. I can be of assistance to him if you will refer the writer to me.

W. T. Ayland, of the Improved Brick Co., 300 Atlas Bldg., Salt Lake City, Utah, writes: "The inquiry of 221, Texas, Nov. 18 issue is of such importance that we must all get together as far as statistics are concerned and help the good work along. I have written the gentleman a personal letter with some data regarding concrete construction, and hope every person in the clay business will come forward along the same lines. The impression given to the press by the American Society of Architects, in one of your recent issues suggests that nothing further would be necessary so far as clay products are concerned.

Efficiency Engineering Co., 30 Broad St., New York City, Paul O. Abbs, president, writing says: "Referring to the following questions in your Nov. 18 issue wish to reply: 228, Missouri—If your correspondent will forward us a small sample of the flint silica sand by mail we would be pleased to advise him regarding the uses that his material may be adapted to. 229, New York—It seems as if the conditions at your correspondent's plant are rather remote. If the shifting of the burners did not bring the desired result it indicates that they are not interested in the welfare of the plant or the good working of the kilns. To obtain their good will a change of system may be advisable. We have been able to get good results in similar cases. There is also an electric alarm on the market which will ring a bell as soon as the burners neglect their duties. This may be installed in the superintendent's bed room. We know this device has been used for years in a number of plants and the repairs are insignificant." Mr. Abbs also encloses a letter to be forwarded to 205, N. Carolina which has been done.

Manufacture of Silica Brick.

246. *New Mexico—Can you refer me to a reliable and practical book or publication treating on the manufacture of silica brick?*

"Refractories and Furnaces," by F. T. Havard, associate professor of metallurgy at the University of Wisconsin, is a very valuable contribution to this subject and is listed in "Brick and Clay Records'" Book Department at $4, postpaid. Bulletin No. 7 of the Bureau of Standards, Department of Commerce and Labor, Washington, D. C., also contains much of value, as does Bulletin No. 18, of the Illinois State Geological Survey, Frank W. DeWolff, director, Urbana, Ill. Vol. XIV. Transactions American Ceramic Society, has several very valuable papers on the subject and can be obtained of the "Book Department," this office. This latter book is $5.50 in paper binding and $6.25 in cloth.

Kiln Floors for Paving Brick.

227. *Kansas—What kiln bottom is best adapted for a round-down-draft kiln used for burning pavers?*

An open bottom is preferable to the spider bottom as with the latter the heat cannot be controlled. The open bottom, however, has its disadvantages for it permits the heat to escape and the product at the bottom usually is not burned hard enough. There should be enough solid bottom to act as a retarder to retain the heat in order to burn the brick hard.

Interested in Electric Drive.

245. *Illinois—In "Brick and Clay Record" some months ago, you published an article on "Power Consumption" by Richard R. Hice. Will you be kind enough to tell us the name of the concern whose results on electric drive he describes?*

Mr. Hice informs us that it was the Fallston Fire Clay Company, of Fallston, Beaver County, Pa.

Interested in Developing Clay.

260. *Pennsylvania—I have been referred to you by the United States Department of Interior. Am interested in developing some brick clay and would appreciate any information you can give me. Please send me your magazine.*

We have sent sample copies of the magazine as requested. Our Pennsylvania correspondent might read "Modern Brickmaking" listed in our Book Department, with profit.

Wants Brick Mantel Designs.

233. *Texas—Please advise us where we can get some designs for brick mantels. About all we would care for would be pictures of the mantels showing how the brick are laid up and the different styles of mantels made of face brick.*

The Thomas Moulding Brick Co., Chamber of Commerce Bldg., Chicago, publish a highly artistic catalogue on mantels which will answer your purpose.

Drain Tile in Washington.

230. *Illinois—Could you or any of the readers of "Brick and Clay Record" inform me as to the prospects or possibility of the drain tile trade in Skagit or Whatcom counties of Washington? I would appreciate any information along this line.*

We presume our friend wants to know if these two counties are fertile fields for a manufacturer. We have no information at hand but feel satisfied some of our Washington readers can supply the information. We will publish replies gladly.

Has an Excellent Plant Location.

235. *Indiana.—If you know of anyone or any company looking for a brick and tile plant location, I would like very much to have you call their attention to the company whose address is given you. This concern operates a small plant. I have been connected with some of the best plants in the United States in the past nineteen years and have never seen a better location for a modern plant than this place. This company cannot supply the unsolicited demand for tile as its capacity is not large enough. It has, to my knowledge, in the last four months, turned down more than* $20,000 *in orders because it could not fill them. The clay is the best tile clay I have ever worked. It is easy to work, easy to dry and easy to burn. After it has been burned, it has a deep cherry red color and rings like a bell. At present, I am acting as manager, but am not financially connected with the firm. I would like to see a larger plant located here both for the community and the citizens. I can safely say that a ten or twelve-kiln plant would prove profitable and, at all times, find the demand sufficient to keep it busy. I would be glad to answer any letters sent me care "Brick and Clay Record."*

At the risk of incurring the classified advertising department manager's displeasure, we are giving space to the above in this department.

Up-Draft Kilns for Dry Press Brick.

250. *Iowa—We are considering installing a dry press outfit in our plant and would like to know if we could burn same in the kilns we now use. The kilns are the ordinary up-draft kilns and we are burning common soft mud brick and getting a very fair brick for this class of ware. Our clay, under the dry press process, takes about 2,100 to 2,200 degrees Fhr.*

Practically two-thirds of the dry press brick of the country are burned in up-draft kilns. We have one case in mind—the Ferris Press Brick Co., of Ferris, Texas, with a capacity of more than 230,000 a day, where up-draft kilns are used exclusively. This plant is described in the "With the Plants" department in this issue. Boyd presses are used and we know the Ferris company is burning a most excellent brick.

Wants Books of Interest to Kiln Burners.

201. *Indiana—We enclose check for $1, for which send us book "How to Analyze Clay." If you have any other good books of interest to kiln burners, please send list of same.*

We have complied with this request. We might add that our "Book Department" has a page in the front of the magazine listing all the books we publish or keep in stock.

As to Cost Accounting.

263. *Oklahoma—Several weeks ago I saw in "Brick and Clay Record" something about the secretary and others of the American Face Brick Association having issued a circular on a cost system. I believe this was in the issue of Oct. 21 but cannot locate the number. Will you please give me the address of the secretary of this association or the man I should write to for information concerning this circular?*

The article appeared on Page 801 of the Oct. 21 issue. Write to R. D. T. Hollowell, Secretary American Face Brick Association, Park Building, Pittsburgh, Pa.

As Regards Freight Rate to Menasha, Wis.

251. *Illinois—In your issue of Oct 21, in "The Freight Rate Department," you showed a rate on drain tile from Boone, Des Moines and Mason City, Ia. to Menasha, Wis., of 9c per cwt. Railroads disclaim any knowledge of such rate and we wish to know where you secured this information. It would seem to be in error.*

This rate appears in Supplement 31 to Chicago, Milwaukee & St. Paul Ry. I. C. C. No. B1955 on page No. 20, item 21C. This case emphasizes the statement we often have made that clayworkers who ship will find our "Freight Rate Department" one of value to them. Our advance bulletin service is direct from the I. C. C. reports and orders and is quite often weeks and even months ahead of the service supplied by the railroads, which are more apt to give you the wrong rating (usually in their favor) than they are the right. Study our "Freight Rate Department" each issue. We believe it would be of value to you, and hundreds of instances have occurred where the advance information contained therein has saved many dollars to our readers who watched the various changes. We employ special experts to watch the Interstate Commerce Commission decisions and it is certain that we will be less apt to mislead you than your local freight agent. As a matter of test take up some new rate affecting your local market and ask your local freight agent to give you figures. The chances are he will give you the old rate and when cornered, disclaim any knowledge of the new. We are prepared to verify any information we give you in the "Freight Rate Department."

Wants a Counter.

234. *North Carolina*—(1) *Who handles the fire proof cement that stands about* 3,000 *degrees of heat?* (2) *Who makes a counter that records the cars of brick?*

(1) We will have to refer this question to our ever-willing readers for a reply. (2) The Ceramic Supply & Construction Co., Columbus, Ohio and the Chambers Bros. Co., Chicago and Philadelphia, are our only advertisers who announce they make counters for this purpose.

Prize Problems for the Clayworker

In each issue of "Brick and Clay Record" a problem will be propounded to the readers—usually an actual experience of some clay worker, who, confronted with certain conditions, sought a solution and succeeded, or, having failed, still waits a Moses to lead him out of the wilderness. A special prize of a paid-in-advance subscription to "Brick and Clay Record" for three years will be given for the best answer.

PROBLEM NO. 2:

What would you do if you had a clay pit 1,000 feet from the plant and it was necessary to haul the raw clay up an incline to the storage bin? Would it be more economical to continue to use a mule to pull the cars to the incline and then hoist them to the storage bin by a driven hoist or is there some other system more efficient and economical? The capacity of the plant is 40,000 brick per day.

Send in your answer to Problem No. 2 so it will reach this office before Dec. 18. Address your letter to "Prize Problem Contest Editor, Brick and Clay Record," Chicago.

PROBLEM NO. 3:

What would you do if you had spent all your life in the manufacture of clay products, and now at the age of 56 years, having a 20,000-a-day plant of uncertain value as your sole asset and being forced to admit that you have made a failure at the game, and your only son, 20 years old, suddenly evinced a desire to follow in your footsteps and learn the business? With your own failure before you, would you encourage him in this desire or urge him to take up some other vocation?

Send in your answer to Problem No. 3 so it will reach this office before Dec. 28. Address your letter to "Prize Problem Contest Editor, Brick and Clay Record," Chicago.

PROBLEM NO. 4.

What would you do if you had a three-kiln plant modernly equipped as far as it went, with an inexhaustible bed of clay that burned the finest of hollow ware and there was little or no competition and you had a demand in your local community for five times as much as you could make—what would you do if such a condition actually existed and you did not have the capital to swing a larger project?

Send in your answer to Problem No. 4 so it will reach this office before Jan. 10. Address your letter to "Prize Problem Contest Editor, "Brick and Clay Record," Chicago.

Problem No. 5 will appear in the Jan. 6 issue and new problems will be published in subsequent issues. Answer to Problem No. 2 will appear Jan. 6; to Problem No. 3, Jan. 20; to Problem No. 4, Feb. 3.

ANSWER TO PROBLEM NO. 1

A similar problem such as you propounded confronted an Indiana clayworker and he solved it very ingeniously. A shale planer was devised. It consisted of an endless chain of knives supported by frame work which rested on a small car. A track was laid at the foot of the bank—within a few inches to enable the shaver to work on the face of the bank. A small electric motor ran this chain, taking the current from an interurban car line feed wire on top of the bank. A trolley, such as are used on the regulation street car, picked up the current. The motor also furnished the locomotion for the car on the track, and through the application of a screw gear, the shaver and cars moved automatically a few inches across the face of the bank at every revolution of the chain shaving knives.

When the car had traveled the full distance of the bank—some two or three hundred yards, a twist of a jack screw moved the shaver closer to the bank to give the knives a cutting surface.

By this device the material was thoroughly mixed as it is sliced or planed from the top of the bank to the bottom. It also lessened the work of the dry pans and economized on labor.

One man operates the shaver and another drives the horse that pulls the car or train of cars from the shaver to the mill. This driver leaves a train of empties at the shaver and these are loaded direct by belt conveyor from the shaver while he is making a trip to the mill.

This device is in use by the Indiana Shale Company, of Brooklyn, Ind., and I understand it is patented. It certainly solves the problem at this plant as it gives a perfect mixture, delivers the shale almost ready for the pug mill and there has never been any further trouble from irregularity in the burning.—H. W. R.

B. Copping, 705 S. Myrtle Avenue, Kankakee, Ill., sends in an answer to Problem No. 1. It is significant that he also uses the same illustration as the winner above does. Inasmuch as the other answer is more complete the prize is awarded accordingly. Mr. Copping says: "I would mine the shale with a "Shale Planer" like that illustrated and described on the "Superintendent" page of "Brick & Clay Record," December 1, 1912, as being used by the Indiana Drain Tile Co., of Brooklyn, Ind. At that plant this novel machine is at work on a shale bank like that mentioned in "Problem No. 1" and is meeting all the conditions as to mining, mixing and economizing of labor, better than any other known device or method."

The Superintendent

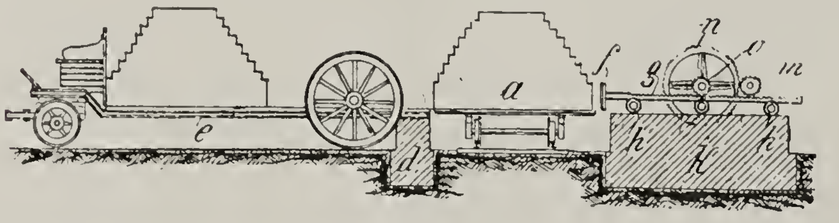
A Department Conducted for the Interchange of Ideas in Methods of Manufacture

Contributions from our readers are solicited for this department on any subject pertaining to the manufacturing end of the industry. Short cuts and labor-saving suggestions are particularly sought. Address all communications to the Editor of the Superintendent Department. Brick and Clay Record, Chicago.

SMALL stencils, with figures a half-inch high, can be purchased for a few cents. Since black ink will not show well on dark-colored face brick, use green ink that will be equally plain on either light or dark brick. Assuming that you have a yard number for every order, see that this number is stenciled on at least six samples, selected by someone familiar with the requirements of the customer who placed the order, and showing the extremes of variation that the customer will permit. Use these samples outside of the car door, in the daylight, and instruct the wheelers to compare every barrow load with the six samples. When the car is full, put the six samples away. They will serve to make subsequent shipments on the same order correspond to the earlier cars, and, when the customer places an order later, to either finish the job, or start a new one, you will have something better than a "shade number" to go by.

Motor Truck Loading Device.

A German inventor has devised an ingenious method of loading bricks on to motor trucks. The illustration is almost self-explanatory. The motor truck is backed up against a low wall (d); a car load of brick (a) is taken along a track at right angles to the truck and, by means of a simple gearing, the brick are pushed by the rammer (f) on to the truck, until they are in the desired position (e). If the truck is long enough, two car loads of bricks may be carried at a time. The arrangement has been specially devised for sand-lime bricks, which are taken out of the hardening chamber on cars, as shown at (a); but it should not be difficult to modify the arrangement so as to utilize it for smaller cars taking face brick from the kiln, where it is necessary to avoid damaging them by throwing them into a car or wagon.



A Suggestion in Lamination.

Lamination is one of the great troubles of brickmakers. It sometimes happens that the trouble is at the ends of the brick, only. In this case the trouble can be remedied by having the die made larger than the actual size of the brick and taking off a slice of each end. This is done by placing a wire across the face of the die at each end. The simplest, and often the most effective way to prevent, or reduce lamination is simply to speed up the machine and keep the pug mill well filled with clay or shale. Speeding is not offered as an absolute cure for lamination but it is one of the many methods used for reducing the trouble.—W. W. P.

THIS IDEA WINS $5 PRIZE

Basil Copping, 705 S. Myrtle Ave., Kankakee, Ill., is the winner of the first prize in the semi-monthly contest conducted in this department, the article submitted below being adjudged the most helpful of all those entered into the competition. Mr. Copping has contributed several items to this department, usually under the pen name, "Mud Dauber." Here is his suggestion:

THE CARE OF TILE DIES.

Dies for the manufacture of brick, tile and hollow ware, very often suffer injury from careless storage when not in use. It is no unusual thing on some plants, to find the stock of dies, cores and other accessories in a corner of the machine room, on the floor and in a mixed pile. In order to get at any particular die a great deal of heavy equipment has to be turned over. This work consumes time and often injures the dies. It is a good plan to store this kind of equipment on heavy shelves or racks, preferably ranged along a wall so that each die is in plain sight and can be reached instantly without disturbing any of the others. When a die is removed from the machine, all clay should be scraped out of it and the working surfaces greased with a heavy lubricant before placing it in storage. That the time taken to do this is well spent, will be apparent from the following incident which occurred on a large tile plant. The stock of 6-inch tile was low as the plant had been running on other sizes for several weeks; so the 6-inch die was dragged from its hiding place and put to work. Although the die produced some fine looking ware, the foreman was discouraged as the product consisted of elbows and return bends instead of straight tile. Someone suggested that the core was not central, so they trued it up with calipers. Again the machine was started and some more crooked tile came into the world. Then they removed the die and dug out the clay from around the auger but no obstruction could be found. The machine room force was losing time and the cause of the trouble was still a mystery. The die was then carried into the machine shop and the master mechanic was called in for consultation. A more thorough cleaning of the die revealed a patch of iron rust about four square inches in area on one side of the die. After the rust was cleaned off with emery cloth and oil the die made straight tile.—Mud Dauber.

A prize of $5 is paid for the best suggestion for this department in every issue. Every "next best" item or suggestion published will be paid for at the rate of $1. Write only on one side of a sheet and if drawings are submitted, make them on a separate sheet and in ink if possible. Be brief. Address suggestions to Editor Superintendent Department, Brick and Clay Record, Chicago.

Simple Device for Washing Clay.

Washing, or mixing the clay with a large quantity of water, is a simple method of separating it from stones and other impurities, says Searle. Chalk, when used, also is washed to clean and reduce it to the necessary fineness to be properly mixed with the bulk of the clay. Some mixtures of chalk and clay in suitable proportions occur naturally and are known as "real malms," but more frequently a certain amount of chalk is added to produce an artificial malm. The clay and chalk usually are washed separately in large circular tanks or washing machines. In the center of the tank is a pillar with the lower part of brick work and the upper of metal. This latter acts as a pivot on which is hung a horizontal frame containing a number of suspended harrows or washing gates. The frame is rotated by horse or mechanical power—the latter, of course, preferable. The tank is filled to three quarters of its depth with water and the material to be washed. A thick slip soon is formed by the tearing action of the tines on the harrows on the clay. At suitable intervals the machine is stopped and the slip permitted to run out into settling tanks. Stones and other undesirable residue remain in the machine. After being filled and emptied three or four times the machine must be cleaned, the thoroughness depending, of course, upon the proportion of impurity in the clay. This machine is one that has been in use for years and has proved its practicability. More modern adaptions of the idea make it possible to have a continuous operation.

Sort Brick at the Kilns.

The following lines regarding the sorting of brick may be of benefit to some superintendents who have trouble in making uniform shipments: Sort your brick very carefully as they are taken from the kilns. It is much cheaper to do this work thoroughly at that time than to have to re-sort when shipping from the piles.

Drain Tile Should be Glazed.

The old idea that drain tile should be porous is not accepted today by those who have given any study to drainage. Drain tile, like sewer pipe, should be burned hard and glazed. A string of tile will take in at the joint all the water the drain will carry. A porous tile, although it may be burned hard, is weak and breaks easily in the handling.

Treat Your Men Like Humans.

Have confidence in your men, and treat them like human beings—they will appreciate it, and it will make you money. I have seen one man stop a gang of four or five men while he rolled a cigarette. Get rid of him, he is costing you more money than the highest salaried man you have.—N. Hermes.

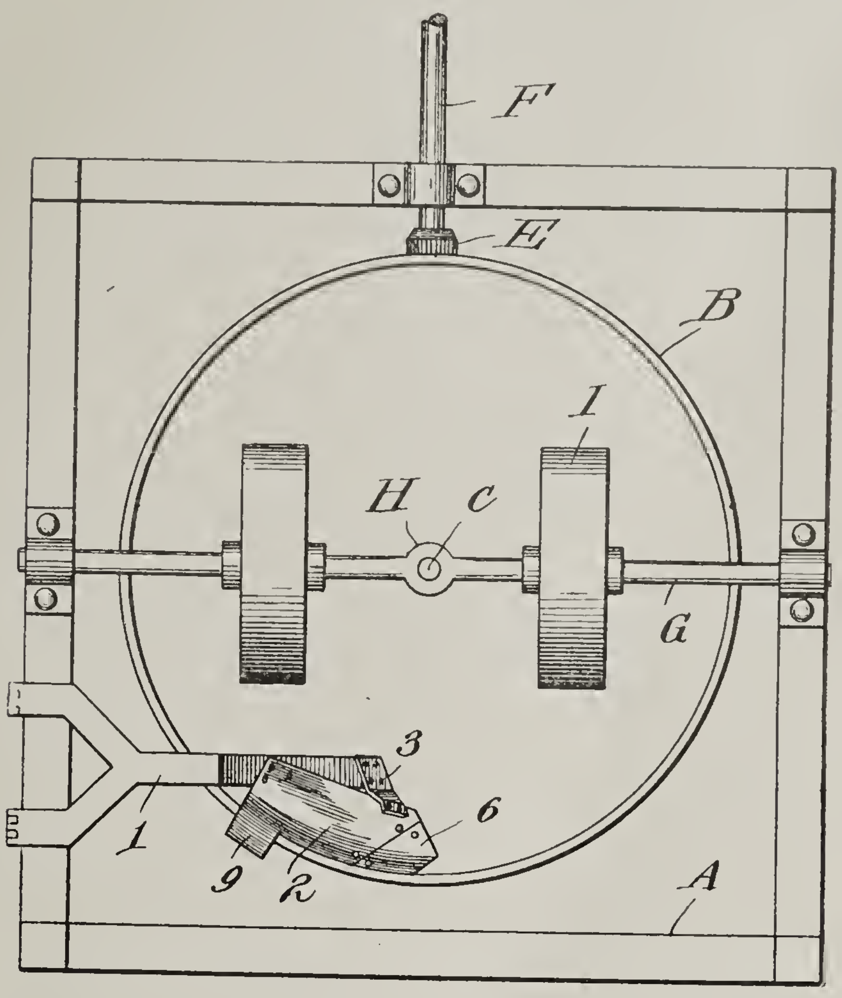
To Increase Capacity.

It is often desired to increase the capacity of a pug mill. If the clay does not require too much pugging the capacity can be increased by using larger feeder knives and also by using sockets that admit the use of a larger number of knives. It must be borne in mind, however, that if the material is "short" a great deal of pugging is required and increasing the capacity of the pug mill would in all probability reduce the quality of the ware. A very plastic clay can be worked, ordinarily, very fast without lowering the standard of the ware.—W. W. P.

Horizontal Belts Give More Power.

In order to transmit maximum power with a given belt, the belt should be horizontal or as nearly so as possible, with the tension on the lower stretch. This will permit a slacker belt, thereby saving the belt and bearings, and the additional power required to overcome the increased friction due to tight belt. This means that in laying out a brick plant care must be taken to have every belt possible as above mentioned—certainly the main power belt and belt to brick machine proper.

William R. Wakefield, of Mount Vernon, Pa., has invented a scraping device for removing the contents of a dry pan by scooping it over the edge of the pan. By referring to the accompanying drawing the frame (A) is arranged to support the revolving pan (B) which is mounted to rotate about a centrally disposed shaft or post (C). The bottom of the pan may be provided with a spur gear (D) meshing with a pinion (E) upon a driven shaft. A cross bar or shaft (G) supported upon the frame (A) and having an eye (H) engaging the post (C) supports the rollers or chasers (I) which are in engagement with the bottom of the pan so that as the latter is rotated clay placed in the pan will be ground and disintegrated. Hingedly supported upon one side of frame (A) is an arm (1) carrying a scraping member known as a plow (2) which is reinforced by a brace (3), whereby it is held in proper position. The plow consists of a blade having a curved upturned edge adapted to engage the inner face of the side wall of the pan (B). The opposite edge of the blade is straight. A scraper (6) of hardened steel is connected by means of a connecting plate and fastening members with the lower edge of the blade (2), the scraper being adapted to engage the bottom of the pan and the corner formed by the intersection of the bottom and the side wall. Adjacent to its upper end the blade (2) is provided with an outwardly extending lug or flange (9) adapted to overlap or overhang the upper edge of the side wall of the pan (B). In the operation of this device, the hinged arm normally may be raised or moved to a position in which the plow shall be disengaged from or raised above the pan. When it shall be desired to scoop out the contents of the pan, the plow is lowered to the position shown and the contents of the pan, which is thrown by centrifugal action in the direction of the side wall, will now be forced to slide upwardly upon the inclined plane of the plow blade, being eventually discharged over the overhanging flange (9). A suitable receptacle may be placed in proper position to receive the material as it is being discharged, a simple belt conveyor being practicable.



Plan to Save Labor.

Wherever possible, in remodeling your old or installing a new plant, plan to make every operation as near automatic as possible. It means labor saved, and labor is an item that is not for today but for tomorrow and next year.—A. Longhed.

Take Care of Your Belts.

Have your night man examine your belts every night—it will save stopping to lace a belt during working hours. Never put resin on a belt. It makes belts hard and eats them up. Keep your belts soft and pliable. If the drive is not too short, a slack belt will give better service than a tight one.—N. Hermes.

Keep Water Out of Waste Heat Ducts.

Undoubtedly more clay products are lost during the drying period and in kiln marking, due to wet setting, than anywhere else. Keep the water out of low places in your waste heat ducts and fan pit in wet weather. If natural drainage is not available a steam jet ejector, similar to the Blakesly, is an excellent substitute.—H. L. L., Chicago.

To Make "Bushings."

The following way to make a "bushing" will be found very helpful and practical in the engine room and elsewhere. To make a bushing from ¾" to ½", take a ½" coupling, screw it firmly on a short piece of ½" pipe so it can be held in the vise. Then take your ¾" pipe die and cut threads on the outside of the ½" coupling. This makes a very neat and good bushing. The same method will hold good with all sizes of pipe couplings.—J. J. Sabin, Ft. Smith, Ark.

A Pregnant Suggestion.

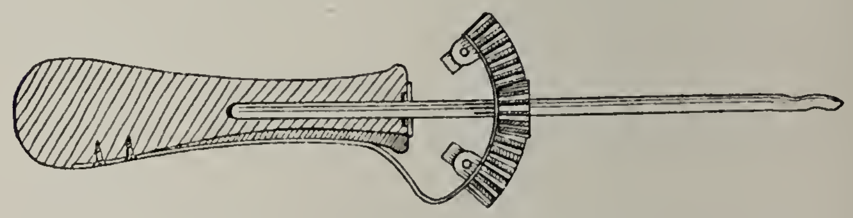
A brickmaker of unquestionable ability has tried the experiment of setting brick in the kilns after reaching a certain height, on the flat side. The result is that the brick shrink less than those set on the edge. If the brick shrink less, as they undoubtedly do, it would seem reasonable to infer that where the clay is excessively plastic, and where, consequently the shrinkage is very great, it might be possible to increase the strength of the brick by setting as many as practicable, in this manner. As the ware shrinks there is a tendency to destroy the bonding power. On this account it is believed that by reducing the shrinkage the bonding power would be greater, making the ware much stronger. This is merely a theory and it is offered simply as a suggestion. In troublesome cases, where experimenting is necessary, this might be valuable.—W. W. Phillips, Galion, Ohio.

Has Your Output Decreased?

To those men whose work brings them into contact with a large number of stiff-mud clayworking plants the complaint of a decreased output is a familiar one. An auger machine is made on the combined principal of an auger and a wedge. The die also is made slightly wedge-shaped—that is, the opening of the die next to the propeller is larger than the mouth piece. It must be apparant to any brickmaker that being so made there would be an enormous back-pressure. In time the propeller and the liners in the nozzle or barrel of the machine become worn and the great back-pressure causes part of the mud to escape between the propeller and the liners and as a consequence the capacity is often greatly reduced. It is very strange that a practical clayworker would have to have his attention called to this elementary fact, but it is true, nevertheless. The remedy, of course, is to get a new propeller or new liners for the nozzle or both if both are worn. Again, one kind of propeller is found by practice to be peculiarly suited to one kind of clay and will produce a greater output in a given length of time than another kind. If the output is reduced suddenly and the propeller shows no signs of wear and the liners in the nozzle are too close-fitting to permit any escape of the mud by back pressure, it is probable that the clay has changed and that a different style of propeller could be used to advantage. There is no hard and fast rule for the use of propellers. In a general way a very plastic clay would require what is known as a single-wing propeller, but the rule is subject to many exceptions.—W. W. Phillips, Galion, Ohio.

An Oil-Hole Cleaner.

The gummed and caked oil that plugs an oil hole is not easily removed, and sometimes a bearing runs hot because no oil reaches the moving surfaces. A cleaner for the purpose, much better than an awl, is one having a revolving spindle with an awl or screw point, which can be made as follows: The handle consists of a large file handle to which is attached a spring lever carrying an arc cut from an old egg-beater cog. The spindle revolves in the handle and is kept in place by a washer soldered to it at a point where it will fit under another washer fastened to the end of the handle. The small cog, also taken from the egg beater, is attached to the spindle where it will mesh into the cogs on the arc. The spring to which the arc is attached is fastened, as shown, to a plat cut in the handle. This allows the arc of the cog wheel to be moved back and forth by finger pressure, and it is seen how easily and quickly caked oil can be removed from an oil hole with this cleaner.



Warm Up Your Screens.

For plants where clay is run damp over the screens a steam coil made from a couple of pieces of old pipe, under your screens, means increased capacity in cold weather. Before cold weather comes see that all steam and water pipes are fixed for thorough and easy draining. —H. L. L., Chicago.

Keep a Clean Yard—It Shows Prosperity.

Clean up your yard—nobody likes to see a yard looking like a dump-ground, besides it does not show either prosperity or good management. Be alive and up-to-date, always smiling and always doing—let the other fellow do the grouching—N. Hermes.

As to Machinery.

See that your machinery is well-oiled and all bolts kept tight. Always carry in stock extra parts that are liable to break or wear out—it will often save you two or three days' shut-down. Take those old, worn-out knives off the pug mill and auger—they are not giving good service, besides they take power to pull them. Do not crowd your machinery beyond its capacity; if you do, something will break. Employ a good machine man—he will keep your machinery up to date. An up-to-date man will cut out the short stops.—N. Hermes.

Tunnel for Clay Storage.

We notice in your Nov. 18 issue a plan for storing clay for rainy days. We tried this plan several years ago, but found that to store any large amount of clay that it would require awful heavy timber to hold the weight of the wet clay. We have had in use for some time a plan that we think is somewhat better in that it allows the storage of larger quantities of clay—in fact the clay can be increased to almost any desired amount. We built a tunnel 6 ft. square partly in the ground, and 60 ft. long. We placed in this tunnel an elevator belt 24 in. wide and 60 ft. long. Just over the center of the belt and in the center of the top of the tunnel we left an opening covered with loose boards which when taken up, allows the clay to fall on the belt and is carried into the dry pan or crusher. Twenty feet above this tunnel is placed our track from which the clay is dumped. This gives us a pile of clay 20 ft. high, 60 ft. long and 60 ft. wide at the bottom. This can be increased by raising the track or making the tunnel and belt longer.—G. W. Isenhour, New London, N. C.

Hot Bearings.

Hot bearings are one of the most prolific sources of trouble around a brick plant. There is so much dirt and dust that it is impossible to keep out of the bearings, and all gritty material tends to cause heating. Every care should be taken to keep the boxes free of dirt and a good lubricant should be used. If the box still heats it is probable that it is clamped too tight on the shaft. The remedy is to loosen the box. There should, in such cases, be an extra liner put under each side of the box and then have it tightened again. Often, the babbitt is worn out or is of poor quality and heating results. It is waste to pour oil on such boxes. A new box should be run and a good grade of metal used. The shaft should be examined for any little nicks that might possibly cause heating. New bearings ordinarily heat at first and this is to be expected, though they should never be allowed to run hot enough to burn.—W. W. Phillips, Galion, Ohio.

To Increase the Power of an Engine.

It is absolutely impossible for any man living to say with certainty the power required to drive an auger brick machine of a given caapcity. The reason for this is, that various clays offer varying degrees of resistance. That is, one variety of clay will require much more power to force it through a die than another. After a competent engineer makes an examination of the clay he can usually approximate the power necessary, but for many reasons these estimates are often short of the requirements. The manufacturer finds his power is insufficient. There are two things he may do. He may get a new engine of greater power, or he can increase the power of the engine he has by increasing the speed and using a smaller driving pulley. The power of an engine varies directly with its speed and by decreasing the size of the driving pulley in the same proportion that the speed of the engine is increased, the power of the engine is increased without affecting the speed of the brick machine.—W. W. Phillips, Galion, Ohio.

If Cracking Suddenly Increases.

The great need of practical men—men of endless resource, is forced on the attention of some of the men closest to the trade many times every day. A Western brickmaker wrote that something was wrong at his plant. He said that twenty-five per cent of his brick were ruined in drying. Of course he felt that somebody was to blame. But he was mistaken. His clay changed suddenly. An oil-lubricating die was substituted for the water-lubricating die formerly used, the extension ring placed between the propeller and the die was removed and a small quantity of sandy clay added to that which had become too plastic. Another way that probably would have reduced the loss, would have been to use hot water for tempering the clay. This has the double advantage of reducing the breaking of the ware and facilitating the drying. It is also desirable to have the material ground as fine as possible. By grinding the clay very fine a much prettier brick is produced, fewer wires are broken, and fewer brick crack. The use of hot water for tempering is just as desirable, in many cases, for the soft-mud process of brickmaking as in the stiff mud.—W. W. Phillips, Galion, Ohio.

Troublesome Belts.

When a belt flies off the pulleys the trouble may be expected to be found either in the pulley slipping and thus throwing the pulleys out of line with each other, or the belt is too loose for the work, or the belt has become hard through the use of an improper belt dressing or possibly because no belt dressing is used whatever. If the belt is loose cut it; if the pulleys are out of line, line them up. If the belt is hard one of the very best belt dressings to soften the belt, and one that will not tear belts, is pure linseed oil. Only a little is necessary and from a long experience with almost every variety of belt dressings under the most trying circumstances I can recommend it as one of the very best dressings.—W. W. P.

Some Hints and Suggestions.

If a boxing with plenty of oil runs hot, there is something the matter with it. It is either too tight or is out of line. Cold water is the best remedy. Keep a cost system. You should know the absolute cost at each and every stage of manufacture. Do not give a man a broken or worn out tool and expect him to do a good days work. Do not submit a sample and then ship an inferior grade of goods, it will get you into trouble. If you can not make a profit let the other fellow sell the job. Too many brick are sold below cost. Overhaul your plant this Winter, and get everything in first class shape for next Spring. A run-down plant never gets any where. Last, but not least, subscribe for "Brick and Clay Record," and read it from cover to cover. You will get lots of information in it.—N. Hermes, Redcliff, Alberta.

Getting Rid of Cold Gas in Kiln.

There is considerable time lost in nearly every kiln or furnace when it is first fired up, on account of the draft "lying dead." This is caused by cold, heavy carbonic acid gas forming in the underground ducts, and if this gas is removed as fast as it forms there will be no stoppage of the draft. An old time method, tried and proven, is a furnace or blower in the stack. The quicklime method such as is used in wells and vats where this gas is to be removed is necessarily slow, and, as time is a factor in the case, this method is out of the question; another method is to pump it out with a vacuum hose or a syphon. A blast of air or steam through the ducts towards the exit is another way of clearing out the gas or keeping it moving. The presence of this gas may be seen at once by droping a lighted piece of paper or a candle into the duct. As this gas is heavy and lies in the bottom of the duct it could be baled out with a bucket just as one would bail out water. Outside of this process being a trifle slow, an old time brickmaker would consider anyone doing such a thing as a "fit subject."—Wm. A. Butler, Oakland, Calf.

About Lubricants.

Use good oil. A good oil is the cheapest in the long run. Use a lighter oil in the Winter than in the Summer. Never use graphite or sulphur to cool off the bearing on an engine, unless you want to ruin the brasses.—N. Hermes.

With the Clay Plants—

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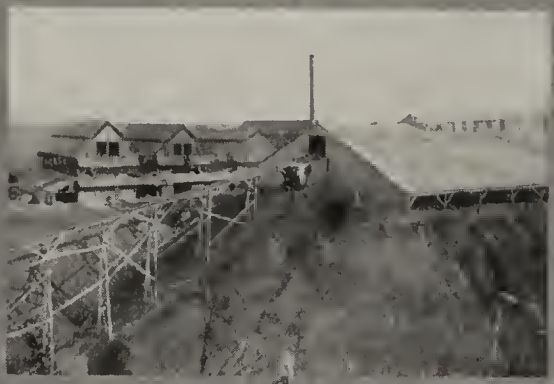
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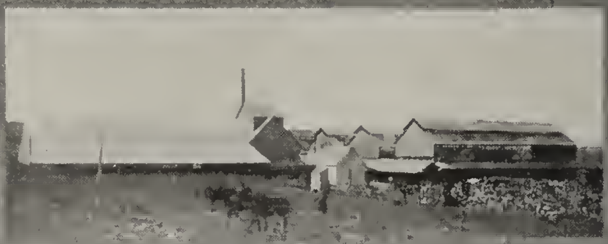
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Fig. 1—General view of the Diamond Press Brick Company's plant at Ferris, Tex. The great deposit of clay is shown in the foreground. This is a three-Boyd press plant.

Fig. 2—General view of the Palmer Press Brick Company's plant at Palmer, Texas. Note the great bed of clay in the foreground.

Fig. 3—One corner of the machine room of the Ferris Press Brick Company's plant at Ferris, Tex. This concern has a three-press battery and a daily capacity of 60,000 to 75,000 brick.

Fig. 4—Showing the haulage system in use by the Atlas Press Brick Company. A great elevated track runs from the clay pit to the storage sheds. The picture shows only a small part of the system.

Fig. 5—One corner of the press room of the Globe Press Brick Company's plant. This concern has a battery of three Boyd presses and has a daily capacity of from 60,000 to 75,000.

Fig. 6—Kiln and part of the plant of the Globe Press Brick Company.

Fig. 7—A general view of the Ferris Press Brick

TEXAS may well be called the "Home of the Dry Press Process," for in this state there are more plants using this process, in proportion to the amount of brick manufactured, than any other one state in the Union. First of all the Texas clay lends itself to the dry press methods. Second, the Texan demands the smooth brick and the beautiful uniformity of color and texture that this process insures.

It is around Dallas, Texas, that most of the large dry press plants are located and the manufacturers have the process down so perfectly they not only supply practically all the face brick used in that territory, but also most of the common brick.

The common or building brick are the seconds from the dry press and represent only about 15 per cent of the output, the remaining 85 per cent being perfect and sold at face brick prices.

Excellent prices prevail in the locality and the various plants that are manufacturing dry press brick have a practical monopoly on the building brick business as the auger-made or stiff-mud brick must be imported and usually from distant states.

Some of the greatest dry press plants are located at Ferris and Palmer, Texas, only a few miles from the city of Dallas. At Ferris, especially, there are several plants and these turn out an enormous output each year. The accompanying illustrations show six of these plants: The Diamond Press Brick Company, The Atlas Press Brick Co., The Globe Press Brick Company, the Texas Press Brick Company, The Ferris Press Brick Company and the Lone Star Press Brick Company. At Palmer, a few miles away, is the Palmer Press Brick Company, which also is shown in the illustrations.

At no other place in the country has the press brick business been developed in a greater degree than in these two cities. Most of the plants are modern and the capacity in two cases is 75,000 per day, these being the Globe and Diamond companies.

Most of the dry presses used in these plants—in fact all, are the Boyd, made by the Chisholm, Boyd & White Co., of Chicago. Two of the plants are running a battery of three

Being A Department Wherein Is Set Forth Factories Contemplated, In Course of Erection, or, Being Complete, Have Some Special Interest; News of the Plants, and Ideas that are of Benefit to the Craft.

Company's plant at Ferris.

Fig. 8—The Lone Star Press Brick Company's plant at Ferris, Tex.

Fig. 9—The Ferris Press Brick Company's plant.

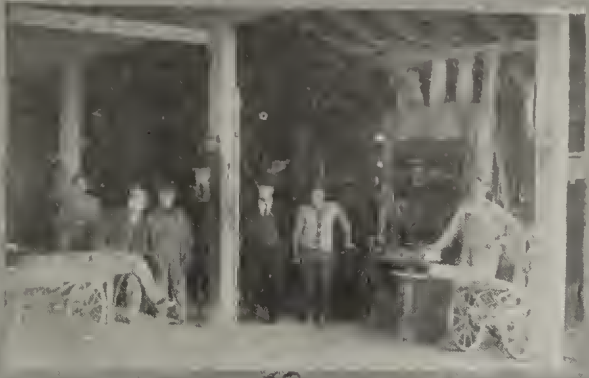
Fig. 10—The Palmer Press Brick Works, located at Palmer, Tex., a few miles from Dallas. This view shows one corner of the press room, where two Boyd presses are installed.

Fig. 11—One corner of the press room of the Diamond Press Brick Company at Ferris, Tex. This concern has a battery of three Boyd presses and has daily capacity from 60,000 to 75,000 Brick.

Fig. 12—The Corliss engine in use by the Diamond Press Brick Company. The engine room of this concern is one of the model power plants in Texas.

Fig. 13—Dry pans of the Ferris Press Brick Company. It is here that the clay is pulverized—one of the important parts of the dry press process.

Fig. 14—Another corner of the press room of the Globe Press Brick Company's plant.



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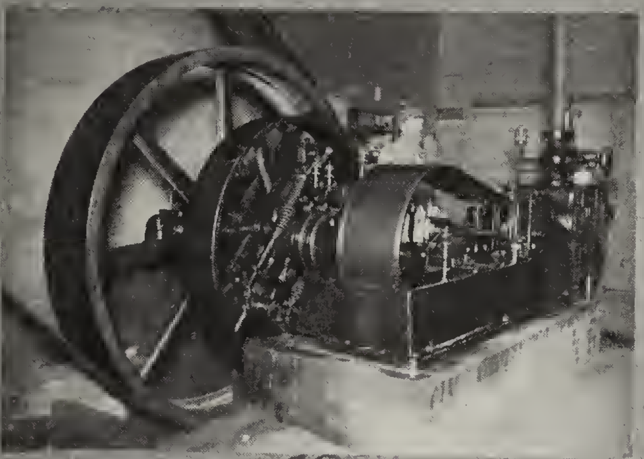

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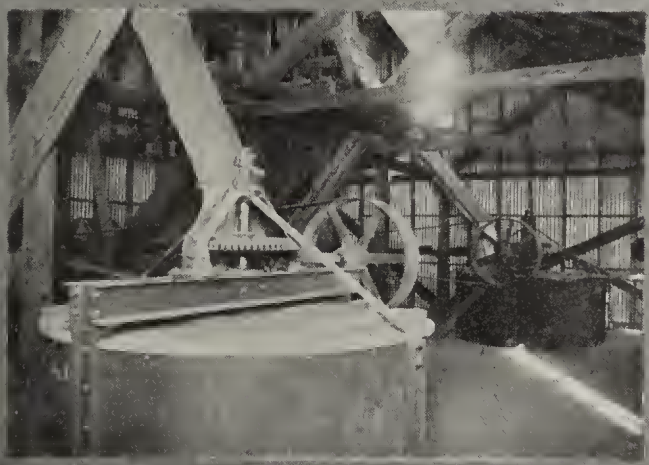

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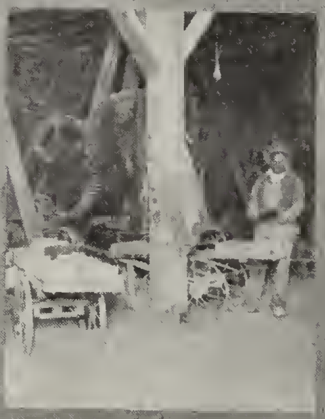

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Boyd machines, these being the Diamond and the Globe plants at Ferris. The other plants mentioned have two machines each.

Pennsylvania, alone, leads Texas in dry press plants, but in proportion to the number of brick manufactured in either state, Texas is far ahead, as practically all the face brick made in the Lone Star state are manufactured by the dry press process, while in Pennsylvania other processes are used.

And, yet, Texas is still to be developed as to the brick industry. The state is growing rapidly. There is a great influx of population and capital and the cities are reaching out into the prairies and this means vast construction enterprises with an ever-increasing demand for brick.

There is an unlimited supply of clay in all sections, especially close to the centers of population. Around Dallas and Fort Worth there are vast deposits untouched. These await the magic touch of the clayworker and some day the smoke from hundreds of kilns will be seen where one is today.

Texas has vast resources. Its cotton alone will afford employment for the rural population, and as the price of this staple product advances the state will increase in power. There are untold mineral resources yet to be developed—many thousands of acres of fertile pasture land that some day must be turned to fields of productive grain.

This means great cities and great cities mean clay plants, for where the centers of population spring up there must be building activity, which, following the trend of modern thought, means imperishable burned clay.

NEWS IN BRIEF.

Manager Vickerson, of the Winnebago, Minn., tile works says plant will continue in operation all winter.

An amendment to the charter of the Kingsport Brick Corporation of Bristol, Va., increases the capital stock from $150,000 to $250,000.

The Denbigh (N. D.) Pressed Brick Company has had a petition filed in bankruptcy. The petitioners are L. J. Palda, of the Second National Bank, and Harry L. Cardsdaftner.

"Some class" was shown in the christening of a new plant at Watsontown, Pa., when Miss Helen Auchu, of Emporium, Pa., broke a bottle of champagne over a part of the brick machinery that is to turn out 100,000 brick a day.

The first annual meeting of the Valley City Brick and Tile Company, of Valley City. N. D., last week, resulted in the election of the following officers: President, K. S. Ramseth; vice-president, George Goulett; secretary-treasurer, M. J. Boyd. The former, together with William Engles and S. L. Davidson, were elected directors. Mr. Davidson continues as manager. The stockholders are well pleased with the present condition and prospects of the company. Construction work on the plant has been stopped until Spring.

The Hebron Clay Products Co., of Hebron, Ind., has inaugurated a novel advertising campaign in the local weekly newspaper. A 5-inch double column space is used and the "copy" usually begins with stanzas of original verse in dialect. which carry a decided moral. At the bottom of the space there is a brief heart-to-heart talk with the reader on the use of burned clay. The Hebron company informs us that the advertising costs him $4 per month or $1 per issue, which is pretty cheap publicity, no matter how small the circulation of the newspaper.

T. H. Graham, president of the Shale Products Co. Limited, Inglewood, Ont., was a visitor at the office of "Brick and Clay Record" a few days ago. Mr. Graham's company only recently installed a modernly equipped plant to manufacture brick and other clay products and the first kiln was being burned when he was in Chicago. He was making a trip to some of the American plants to get ideas and was particularly interested in a conveying system from his clay pit to the plant. Railroad tracks separate his plant from his shale bed and he has the problem of taking the raw material across the railroad property in such a manner it will meet with the approval of the railroad.

COMMON BRICK

The Keener Brick Company has made some improvements to their plant at Weston, W. Va.

E. F. Atwood, of Petersburg, W. Va., is managing a new brick plant at Bradentown, Fla.

The Rea Brick Company has been started, to manufacture brick and deal in building material, at Williamson, W. Va.

The Princeton (Ky.) Brick Works has made some improvements to its plant which will materially increase its capacity.

The Virginia Hydraulic Brick & Stone Company will manufacture brick and paving block at Richmond, Va.

The Fairmont (W. Va.) Brick Company has bought twenty-eight acres of shale clay beds and will make 50,000 brick a day.

The Piedmont Brick Works, which was idle at South Cumberland, Md., has been leased and is now operated by the Caldwell Brick Company.

The Queen City Brick & Tile Company, at Cumberland, Md., has installed more machinery and now has a capacity of 50,000 brick a day.

The Hill & Smith Brick Company, of Paducah, Ky., has changed its corporate name to the Hill & Carnes Brick Company.

E. C. Baldridge, of Manhattan, Kas., has purchased the plant east of Clay Centre, Kas., formerly belonging to William Leach.

The Pender Brick Works, a small plant at Burgaw, N. C., has operated steadily all season and moved its product at fair prices.

Celebrating the close of a good brickmaking season, Harry Pyles, of Whittier, Cal., gave his employes a wiener bake and smoker, Nov. 14.

The Bank of Hampton, of Hampton, Va., has bought R. H. Richardson & Sons' brickyard, at Williamsburg, Va. It was sold at auction.

"Bob" Elliott, formerly general manager of the Nashville (Tenn.) Builders Supply Company, has been elected a member of the commission that rules the city of Nashville.

The Denver Shale Brick Company moved Dec. 1 from its old quarters in Denver, Cal., to a new location at 503 14th St. O. L. Malo is general manager.

The C. F. Thomas & Son Brick Company, at Buckeyestown, Md., has made improvements, doubled the size of the buildings, put in electric power and now has a capacity of 100,000 brick a day.

The Union Brick Company, of Iola, Kas., has been operating steadily since it was rebuilt after the fire that stopped its production some time since, and plans to run on day and night shifts until it can catch up on orders now on its books.

The new Washington (D. C.) Brick Company, has just started up its plant at Abington, Va., making common brick, with a capacity of 72,000 a day. The machinery has been rearranged so as to make more economical runs.

The West Bros. Brick Company, of Washington, D. C., makes 50,000 to 60,000 hand made common and face brick a day. It has seventy acres of clay lands and uses a steam shovel to harvest its material. The plant is at Arlington Junction, Va., and it will be in operation all Winter.

The Rosslyn Brick Company, of Washington, D. C., has moved its office from 827 Fourteenth street, to the brick yards at Rosslyn. The plant has been closed but is liable to be started any time making common brick. They expect to improve on quality and turn out 40,000 a day.

The Washington (D. C.) Brick & Terra Cotta Company has the largest common brick plant in the district. J. H. Miller is at the head and Harry Miller, general manager. The output is 25,000,000 brick a year at two plants, one at Mt. Vernon, Va., and one at Washington, D. C. They are now starting to make a rough-faced brick which will, of course, be used for facing purposes.

The Salisbury (Md.) Brick Company has purchased the W. B. Elliott brick plant at Delmas, Md., and rebuilt the same. Five new kilns have been erected with a capacity of 100,000 brick per kiln. The other plant has a capacity of 40,000 brick a day. A tail rope system is being installed, similar to that used in coal mines, to haul the clay a distance of 1,400 feet on level ground.

The W. T. Walker Brick Company, of Washington, D. C., has closed down its plant at Arlington, Va., the drop in the price of common brick being given as a cause. If conditions do not improve the plant will not be opened again till next Spring. The capacity is 50,000 a day and the output so far this year was close to 5,000,000 brick. Have 600,000 soft salmon in the yard now and 1,100,000 of hard.

The Veedersburg Brick Company, Indianapolis, has been incorporated with a capitalization of $50,000. The plant is at Veedersburg, Ind. The incorporation of the company is for the purpose of separating the Veedersburg plant from the Adams Brick Company, Indianapolis, of which it has heretofore been a part. Dr. Pritchard, who is a member of the Adams Brick Company, assumes control of the new company. The other directors are Fred B. Adams and C. B. Marshall, both of the Adams Brick Company as well. Just at present the Veedersburg plant is idle. and probably will remain so until after Jan. 1. The new 72 x 18 boilers are being installed.

Improvements are being made to the plants of the Baltimore (Md.) Brick Company all the time, some of them having resulted in a 200 per cent increase in production. Patent and Dutch kilns are used and the clay burns to a different shade in each type kiln. These are all sorted and delivered according to size and shade. The Colonial Homewood face-brick is growing in favor and many are shipped outside of the city of Baltimore. Warren Griffiss, the present manager, is one of the most energetic men in the business, his stamina, energy and business ability have put things in a different shape and his ideas are showing themselves in every branch of the business, from the clay beds to the manufacturing, sorting, loading, shipping, office work, the selling, etc. He has reorganized the force. treats all the men kindly, made great changes in the plants and his influence is not only felt in his own plant, but throughout the trade in the state of Maryland.

FLOOR AND WALL TILE

After an idleness of upward of eighteen months, the plant located at Wickliffe, Ky., owned by the Clay products company, will be put into operation soon after January 1, by county clerk Neely, of Wickliffe. The new operator will make a feature of tiling for floor and wall purposes. Work repairing the plant will start at once.

George Lilly, of Anderson, Ind., died in a sanitarium at Dansville, N. Y. He was president of the National Tile Company, which was formerly the Columbia Encaustic Tile Company. He was fifty-three years old. He went to Anderson in 1888 and with B. O. Haugh, organized the Columbia company. He was active in Indiana politics and at the time of his death was chairman of the eighth district of the Republican State committee. He was one of the heaviest stockholders in the Union Reality Company, Anderson, and left an estate valued at $200,000. He was a member of the Madison county council, a Mason, a member of the Knights Templar, Scottish Rite, a Shriner, a member of the Anderson lodge of Elks and an elder in the First Presbyterian church. He suffered a nervous breakdown about six months ago and had been in the sanitarium ever since. He leaves a widow and daughter.

FIRE BRICK AND REFRACTORIES

The Puryear Utility Company has taken over the plant of the Dixie Fire Brick Company at Puryear, Tenn.

The Pioneer Brick Company, of Visalia, Cal., has purchased 160 acres containing a high grade clay deposit, near Bakersfield, Cal.

The plant of the Savage Fire Brick Company at Keystone Junction, Md., employing 500 men, was destroyed by fire, causing a loss of $100,000.

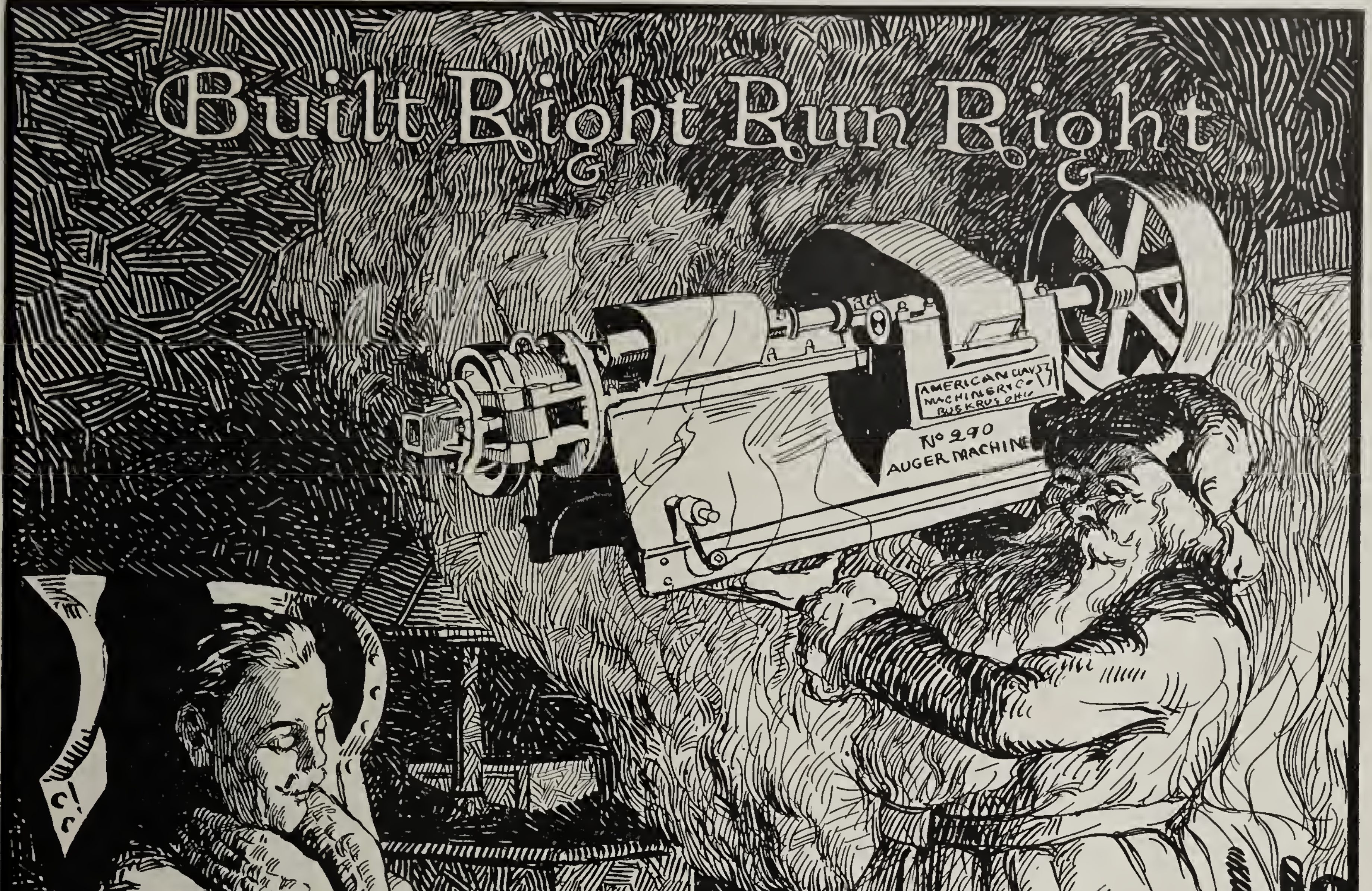
The Big Savage Fire Brick Company, of Frostburg, Md., has opened an office and warehouse at 812 Noble street, Philadelphia, in charge of the General Supply & Equipment Company.

The Thornton Fire Brick Company, of Graffton, W. Va., has chosen T. J. McAvoy president; A. W. Butt, secretary and treasurer; James McCann, superintendent.

Fire clay blocks measuring 24 in. long were used to build the new kiln that has been fired at the yard of the Kankakee (Ill.) Tile & Brick Company. The kiln, which is of 30 ft. diameter, cost $3,000 to build.

The Maryland Fire Brick Company is practically a new concern with a capital of $300,000, which is building a plant at Harwood, Md., and which has also seventy-five acres of clay land. The plant is modern throughout and the plans were drawn by the L. E. Rodgers Engineering Company of Chicago. It will have a daily capacity of 25,000 fire brick, eighteen retorts and seventy-five tons of tile. They are manufacturing fire clay products for furnaces and engaging in the general engineering end in connection with power plants, industrial furnaces and gas works.

The Mt. Savage Fire Brick Company, of Baltimore, has, during the past ten years, remodeled and rebuilt its plant twice, in order to keep it up to date. The latest remodeling is just being completed and is very thorough and extensive. New kilns were built, three of the calcining kind, so as to reduce the shrinkage to a minimum, new machinery and tunnel driers put in. The brick are entirely hand made and there are no



A Merry Christmas and A Happy New Year to Every Clay Worker

May Your Rosiest Dreams Come True. If increased output and decreased cost will help to make your dreams come true you should get information on our new line of Machinery. Particulars on any machine upon request.

The American Clay Machinery Co., Bucyrus, Ohio, U. S. A.

new features except an up-to-date measuring system for the various clays. The output is now 50,000 a day and these improvements have cost $100,000.

At the annual meeting of the stockholders of the Hayes Run (Pa.) Fire Brick Company, which was held recently at Orviston, Pa., the following board of directors was elected: Hon. Ellis Orvis, B. Frank Brown, Robert H. Furst, George Thompson, John K. Furst, C. R. Kurtz and W. O. Bently. The board organized by electing the following officers: president, E. L. Orvis; vice-president, B. Frank Brown; secretary, C. R. Kurtz; treasurer, I. L. Harmon; general manager, Carroll W. Keller. Reports were read, showing that the firm did the biggest business of its career during the last fiscal year, and that orders booked for future delivery assured continued active operations.

The eleventh annual report of the Harbison-Walker Refractories Company, covering operations for the year ending September 30, 1913, has been mailed to stockholders, in advance of the annual meeting which will be held January 19. The net profits of $1,525,000 have been exceeded but twice in the history of the company, but the most interesting item in the report is the statement of President H. W. Croft that the company is now free of bonded indebtedness.

The $3,500,000 issue of bonds, due in 1922, for the payment of which a sinking fund of $175,000 a year was required, was completely retired during the past year, thereby anticipating the final payment by nine years. After deducting $464,017 for all ordinary repairs and maintenance, which covers depreciation of plants, there remained net earnings of $1,723,464. The sum of $197,499 was deducted for extraordinary repairs, depreciation, etc., leaving $1,525,964 net profits.

Bond interest for the year was $39,375; dividends of preferred stock, $576,000; dividends on common stock, $360,000; surplus for the year, $550,589. The total surplus now stands at $6,090,777.

Following is a comparison with the previous year:

	1913.	1912.
Net earnings	$1,723,464	$1,395,932
Deductions	197,499	74,242
Net profits	1,525,964	1,321,689
Bond interest	39,375	60,562
Dividends	936,000	936,000
Year's surplus	550,589	325,127
Total surplus	6,090,777	5,540,188

HOLLOW BLOCK

The Muirkirk (Md.) Brick Company's plant has been idle for years. There is talk of using it again to make fireproofing.

Richard B. Owen, of 629 F street, N. W., George B. Wagner and Edwin H. Suyder, of Washington, D. C., have organized the National Locktile Company, with a capital of $100,000, to manufacture fireproofing.

The Washington (D. C.) Brick & Terra Cotta Company is getting ready to make terra cotta partitions at the Washington plant, are opening up a new bank of clay in the eastern branch of the Potomac river, in Maryland, which is inexhaustible. The clay will be barged to the Washington plant and steam shovels will be used to get it out at Riverside, Md. This firm owns a fleet of barges and two tug boats to transport the brick, hollow block and clay.

PAVING BRICK

The Nanticoke (Pa.) Paving Brick Company has been bought out by Ohio capitalists.

The Westport Paving Brick Company, of Baltimore, has moved its office from the American building to 1202 Garrett building.

The new interests which recently bought out the West Virginia Paving and Pressed Brick Company, at Huntington, W. Va., have decided to make many improvements in their recently acquired property. It is said the new owners will spend upward of $50,000 in installing new machinery and otherwise improving the plant. Work is to be completed as early as possible.

POTTERY

The Southern Paris China Company was organized at Paris, Tenn., to make pottery.

The pottery at Mannington, W. Va., was closed down on the 19th of last month the management saying that the shut-down was for two weeks.

William H. Hanna, who used to have an office in Philadelphia and later in Baltimore, Md., has given up his clay interests at Beacon Hill, Md., so it is reported.

Rouleau, Sask., is the center of a deposit of white clay, the extent of which has not, as yet, been fully ascertained. A pottery concern has taken an option on the land and drilling operations are in progress.

The Haynes pottery, which has been idle a year at Baltimore, is being operated by the Haynes Pottery Company, which was originally run by B. F. Haynes and established in 1881. Frank Haynes is in charge of the plant.

The branch organizations of the Brotherhood of Operative Potters are voting on a proposal to purchase land in Burlington County, N. J., for a sanitarium and farm rest home for its members who have contracted tuberculosis, asthma and bronchial trouble, at their work.

Labor trouble in England is being felt in this country, through the shortage of china clay. The English potteries are taking first call on the limited supply that is being produced, and American potters are inclined to look more and more to our own producers for their supply of this material.

M. Perrine & Sons, of Baltimore, Md., who have made flower pots, stone and earthenware for eighty-five years, have shut down their plant. As it made so much smoke, which was objected to, it was dismantled and the machinery moved to Zanesville, Ohio. The Zanesville plant was established in 1893 and turns out a car load a day. An office and distributing warehouse is still maintained in Baltimore.

The Product Sales Company has succeeded the Selling Company and McIntyre & Kaslin, clay dealers of Baltimore. They are not operating the mines now, but have leased clay beds at North East, Md., from which they expect to furnish clay for paper and pottery work. They have unlimited quantities of pure white clay, which produces ware equal that made from the best English china clays. It is now working open pits with clay cars, but expects to put in steam shovels.

The Florida Clay Company, of Baltimore, Md., has been sold to Charles S. Edgar, of Metuchen, N. J. The plants are at Edgar and Okahunka, Fla. Mr. Edgar has a monopoly of Florida clay now and has associated with him C. D. Harris, of Dillsburg, N. C., who has a large financial interest in the clay beds. They mine 150 tons a day and are making improvements to the plant at Okahunka, Fla. The Baltimore office has been discontinued. Mr. Harris also operates a white potting clay plant at Dillsburg, N. C.

SEWER PIPE AND DRAIN TILE

The T. Somerville Company, of Washington, D. C., is busy making sewer pipe and flue linings for local trade.

Lamond Bros., at Lamond, near Washington, D. C., have a small plant, making sewer pipe and drain tile.

Frank Clyde has a brick plant at Alexandria, Va. His principal product, however, is sewer pipe, of which he makes a fine quality.

The Creston tile plant at Oregon, Ill., was sold at auction Nov. 22. The property consisted of about 38 acres of good clay land, as well as factory buildings, machinery, kilns, etc.

L. M. Johnson, burner for the Whitehall Sewer Pipe and Drain Tile Works, Whitehall, Ill., was a visitor in the editorial rooms of "Brick and Clay Record" a few days ago. He was en route to Carey, Ohio, his home, because of a forced shut down at the Whitehall plant. The water in the reservoir that supplies the factories in Whitehall for steam became exhausted and has crippled all the local factories.

Trade Reviews

New York.

The building code is dead and there endeth one more menace to the welfare of the eastern brick manufacturers.

On the morning of December the tenth this news spread throughout the length and breadth of Greater New York and on that day the brick manufacturers of the Hudson, Raritan and Hackensack districts took a little deeper breath than they have dared to take for some time, for it meant that under the new administration the influence of Tammany hall would be far less potent and brick would stand a better chance as a competitive building material than it would have had had the present board of aldermen passed the code. For years the proximity of certain Tammany powers to certain concrete interests had been the subject of more or less veiled comment whenever the building code was up for discussion and behind the scenes the struggle has waged between the champions of the two leading types of fireproofing construction. In the revision conferences preceding the one just closed, the nature of this fight leaked into the press, with the result that the code failed of passage. In the last attempt the differences between these two factors were submerged in favor of other conditions and in the closing hours of the revision fight everything was lost sight of but the protests of plumbers and wood-trim interests.

But tremendous pressure was brought to bear upon the situation by the brick interests of the North river district with the result that the whole code, which was palpably antagonistic to common brick, was smothered in committee. That marked the end of the efforts of Tammany to revise the building code.

When the matter comes up for discussion again, an entire new complexion will have been given to the political countenance of the board of aldermen. The Fusionists will be a unit from the body of the board clear through to the Mayor's chair and their sway over the destinies of the next building code will be absolute. Political history has shown that the Republicans have been more friendly to brick interests than have the Democrats, and there is every reason to believe that with the code in the hands of the party most friendly to clay products in general, but to a square deal in particular, the next code will at least put burned clay on an equal fighting footing with competing materials.

As far as the present is concerned, the common brick market continues dull. The manufacturers are figuring on getting most of the sixty-odd barges still loaded and awaiting berths in this harbor, back to the up-river sheds, down again and under cover before navigation closes. By this time last year covered cargoes were being quoted, but so far this year navigation is still open and there is not much concern expressed regarding the closing of navigation for another week or two at least.

Dealers were in the market feeling out the 1914 requirements this last fortnight. They have been encouraged to think that they could make advantageous contracts now for next spring's requirements somewhere near the present low price range. Some contracts were taken, but for the most part the volume was small. Apparently the dealers are as hard up for money

White Trucks will Reduce Your Costs and Increase Your Profits

OF COURSE you are interested in means that will reduce your cost of doing business. Such results mean increased profits and give you an advantage in competition. White Trucks will reduce your hauling expense which you know is a big item in your costs. For example:

A White 5-ton Power Dumping Truck owned by the Akron Brick and Tile Company is actually earning $250 to $300 per month, figuring the work it performs at the regular cost of doing it with teams.

The Montowese Brick Co., New Haven, Conn., say: "Our White 5-ton truck does the work of three teams by our figures, at less expense."

Can you afford to overlook such an opportunity for saving in your business?

White Power Dumping Trucks

White Power Dumping Trucks are especially efficient for handling common brick, fireproofing, and similar materials which can be unloaded in this manner.

The White dumping mechanism is simple, swift in operation, is not cumbersome, elevates to a 47 degree angle which insures a perfect discharge of the most obstinate materials and, the complete dumping operation is performed in 30 seconds.

An investigation of these trucks will convince you that their use will not only provide the utmost "hauling" efficiency but will promote economy as well.

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Manufacturers of Gasoline Motor Cars, Motor Trucks and Taxicabs
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For Sale or Rent

Excellent location for coal, brick, lumber or marble yard. Fine chance for wide-awake party with limited capital. Sheds, office and stable. Good stand for cash sales. Reasonable rent to right party.

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Announces that he has severed his connection with Harbison-Walker Refractories Co., where he has been in charge of their Engineering Department

General Engineering Work

SPECIAL ATTENTION TO MANUFACTURING PLANTS

"STAG" BRAND

Manganese Steel Castings

EDGAR ALLEN AMERICAN MANGANESE STEEL CO.

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Cost less to purchase, install and operate than any other type of brickyard pump. They handle gritty water and never need lubrication.

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COST-KEEPING

is being advocated by the organized Clay-Industry. As soon as you have found some of your burning costs exorbitant, send for a Frink Engineer with his

FRINK METHOD

THE FRINK PYROMETER CO.
LANCASTER, OHIO

as are the manufacturers and are not inclined to anticipate their wants very far into the future or until after the turn of the year. There are only about 350,000,000 brick in shed up the river according to the compilation of the Greater New York Brick Company, which is below normal. The actual count by arrivals and sales at the wholesale dock in New York for the full year indicate a bare 300,000,000 according to independent computation by published weekly arrivals and sales. At this rate the reserve is light and at the first upward turn in demand prices are sure to advance.

Covered quotations of fifty cents over the open level of $6 to $6.50 for the best grades of North river commons, are now effective although manufacturers have not begun to cover for the Winter at wholesale dock here yet. They are loading barges under cover up the river and have them ready to come down on the last tow. Those barges that are under cover here are special selects.

In the Raritan department there is a steady demand with prices running about even with Hudsons. Brooklyn is taking considerable Raritan brick, but Newark, Jersey City, Bayonne and Elizabeth in the western part of the district are light on demand and prices are weak. Newark is getting $7.25 to $7.75 yard, for brick of fair quality.

Reflecting the general trend of business throughout this part of the country reports from up the river indicate that manufacturers will not run anywhere near like the capacity they carried two years ago and many will cut the capacity of last year. There is no concerted action in this matter, as far as appears, but individual manufacturers when met with in this city shake their heads doubtfully and declare that they are going to take it easy next year, or at least until they can get a good line on the volume of building that is coming out. If the final count shows (as arrivals and sales in this market indicate for the current year) an output of only 750,000,000 brick as against a normal of 1,000,000,000 for the year, in 1913, that will bring the probable output for 1914 well below the lowest output record in the history of the brick making industry of the North river district.

There are no developments in the other departments of burned clay in this market. Prices have remained stationary for fireproofing material, face brick is without feature although competition is extremely keen, but paving brick, according to local distributers is making fair headway in road construction up the state.

Baltimore, Md.

There has been a steady volume of business among the brick manufacturers until August 15th, when it dropped back from the usual run of orders. Since that date there has been some improvement. The building trade has been held back, largely by the uncertainty of affairs at Washington, and as soon as they are all settled we may look for better conditions. Prices have been very satisfactory. The labor conditions have been very peculiar, by reason of the large amount of state and city work. Labor has been scarce and contractors have been forced to pay any price in order to get labor, and that fact has made it hard for the brickmakers who have been short of hands all the year and have had to pay higher wages than ever. The usual amount of brick has not been turned out for that reason, but on the whole conditions have been quite satisfactory.

There is a great deal of building going on here in the suburbs, Homewood and Roland Park. These sections are building up fast. Brick is being used to a large extent in the building of small houses, all in a row, like the style in Philadelphia. They are not beautiful, as the architecture is all the same, are plain and it is hard to tell which house one lives in, as all look alike. They are built of the soft brick, not burned as hard as the others, cost less, but are quite durable. One architect plans for hundreds of houses, so one set of plans is all that is necessary. One contractor does the whole thing and that lessens the cost. There are thousands of these small brick houses of about eight rooms each. It is said that no soft brick is used for the erection of houses outside of Philadelphia and Baltimore. The soft brick are the ones on top of the kiln and the fire does not reach them so as to burn hard. These soft brick sell for $7.50 per 1,000, which is a dollar less than the common hard sells for.

One of the large improvements to go ahead here is the new buildings to be erected for the Johns Hopkins University at Homewood. They will cost $50,000,000. A high grade common brick is being used for the exterior, and the brick order will be a large one.

Building has held back some this year as money has been tight, collections have been slow, the tariff has upset some lines. There is a movement towards more buildings to go up at Highlandtown and Camden.

The price of common hard brick has ranged around $8.50 per 1,000, which is a better price than obtains in the capital city, Washington, which is only an hour's ride away.

Baltimore is a growing metropolitan city, has around 600,000 population, and has shown wonderful advances since the big fire of less than fifteen years ago. The streets are very narrow and dirty, but there is a lot of business done. It is a large jobbing center, selling throughout the South, having the advantage of New York and Philadelphia, and the only cities competing with it in the South are Richmond, Atlanta, Louisville and New Orleans.

As a retail center this place has some of the finest stores in the country. It shines up bright as a manufacturing place. Its industries are varied and the output heavy. The main lines made and handled here are brick, pottery, tobacco, cigars and cigarettes, clothing, tinware, carriage materials, harness, brooms and brushes, silverware, shoes, canneries, lumber, cooperage lines, furniture, and for the handling of produce, fruits, fish, oysters and shell fish.

There is no tile made here and no sewer pipe for twelve years. It is said there is not enough of the right kind of clay for these purposes. No terra cotta is made in large quantities. New clays beds are being discovered and it seems as if an effort was put to locate clay that it would pay to establish these industries here, as this is the gateway of the South. The plant would have to be out in the country district, as the clay for brickmaking is gradually giving out in the city and the plants are moving farther out. There is, however, plenty of clay, some of the beds having never been worked at all.

It looks as if the year of 1914 will be a bigger one all around, as poor business conditions ruling this year may brighten up. There ought to be a strong call for common brick. Face and front brick are in demand more and more through the South. The manufacturers in the South are making a stronger call for fire brick, retorts, fireplaces, etc. Sewer pipe has been in strong demand for several years in Baltimore and will continue so the coming year, and no doubt throughout the South. Prices have ruled quite good and conditions better. Decorative tile is being used more than ever through the South. Drain tile is more in demand. Pottery products, such as china ware, porcelain goods, etc., have been in very good demand. Sanitary ware has kept to the front as usual. Terra cotta has been increasing in demand as a fireproof material, the red being used considerable and the white becoming quite active. Other fireproofing materials are more in demand among investors who think. Many places in the South are noting the advantages of vitrified paving brick. The South is waking up to the matter of up-to-date construction, fireproofing materials, sanitary tile, decorative tile and other useful, beautiful features and improved methods that are in use in the larger cities of the North.

There is considerable fire brick made throughout Maryland and Virginia, handled from this city, and they are shipped to all states of the Union, the Pacific coast, the Philippines, Canada, etc. The price has ranged about the same. There are no special efforts being put forth to work up the foreign trade or to take advantage of the Panama canal. Some firms are sending fire brick into Canada, paying duty and competing with fire brick from Scotland and the British Isles. The clay around here is a standard and properly balanced, even the Strasburg clays of England are no better. There are no free agents in it, which would allow an enemy to attack it.

Screened clay is used for mortars to set the fire brick with. There must be uniformity with fire brick, which is not so necessary with common brick, as with the latter mortar is used to fill up the spaces. Fire brick must be accurate to lay a neat job and attain a practical result. Some ask how long fire brick lasts. Some lasts eighteen years or more, others ten hours, which depends upon the service and the uses to which it is put. In one place they were used, where iron was welded, oil was used as fuel, there is a tremendous blast and quick action, which eats and breaks the fire brick. It will not stand an impinging flame either, not like it does when the heat radiates around it.

Most of the brick made in Baltimore is of the common kind, large amounts of the face and front brick being shipped here from outside points. There is a demand for a large face brick plant here, providing the conditions otherwise were suitable.

The Union Mining Co. control the Mt. Savage Fire Brick Co. Besides making fire brick, this firm have some of the largest bituminous coal mines in the country in Georges Creek, Md. They sell a great deal of this coal to pottery and tile plants at Trenton, N. J., and other places, the brick plants do not use as much of it. This coal is particularly adaptable to pottery and tile burning, as it does not flash up and craze the ware. These mines have been worked since 1841 and not one-fourth of the coal developed yet. They produce from 3,000 to 4.000 tons of coal a day and 5,000 tons a month of clay is good for a clay mine. Nearly as much coal can be mined in a day as clay can in a month. It is mined by hand, going down some 6,000 feet in the mountain and mine it on a drift. A tunnel is drove through the mountain. The coal then lays practically on a level and requires no skill to get it out, while clay is on a pitch and more difficult to get at. They also mine and use all their own clay, except some screened clay that is sold. This firm is now mining 100 tons a day of clay.

The city has been building all new sewers everywhere, which has created a big demand for repressed brick for several years and will for several years to come. The big work is completed, but a great deal more is to be done in the smaller work. An entire new sewer system was built, which has been a big undertaking and has been of great help to the brick industry, as well as to labor in general.

The Baltimore Brick Company does a very large business, having bought out some twenty-eight plants at various times, but are only operating twelve, having an output of 75,000,000 to 100,000,000 common brick a year and 40,000 to 50,000 a day of repressed brick. All of the plants are in Maryland. Warren Griffiss, who was with the firm for years, is the new general manager. This company is furnishing several million rough texture, soft mud and sand finish brick, with rich and varied coloring for the new John Hopkins University.

Jacob Klein, of the Champion Brick Company, says business is in better shape at Baltimore than for two years, and that many large buildings are projected. There is a greater inquiry for common brick and the general conditions more favorable. The large amount of brick used in the sewerage system has stimulated the demand. This firm uses the Dutch kilns and burns coal.

Prices of brick at Baltimore have ranged as follows: Common hard, $8.50; dark, red face brick, $10.00; light, red face brick, $9.00; salmon, $7.00.

The arrival of some genuine Winter weather, after an exceptionally mild season up to the second week of December, has almost put the finishing touch to the manufacture of brick in this section, and it has certainly had the usual effect on the selling end of the business, though cutting down building operations. The demand for brick for practically all purposes had been slowing down for some time, and with the further

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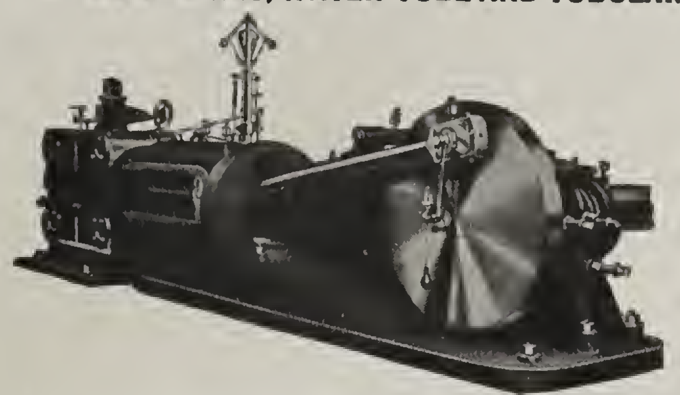

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let-up in building caused by the severe weather, the demand for some weeks to come will be very small. A number of brick men are still fairly active, making deliveries on contracts taken some time ago, but these will be finished shortly and shut-down for a short time, at least will be the rule.

There is equally small call for tile, sewer-pipe and almost all other clay products at the present time. While there are deliveries by some of the trade on jobs which are under way, there is not much new work—practically none, in fact, in this immediate section, and very little further South. In short, the dull season has arrived, and with ample reserve stocks, it is probable that most of the plants will be closed down for periods almost entirely dependent on the length of the present let-up in building and construction work.

Things are still fairly active with the Louisville Fire Brick Works, the plant running steadily on current orders, most of which, however, are rather small. Some of the iron furnaces in Tennessee and other Southern states are taking sizable quantities of fire-brick for repair purposes. The demand for large fire-brick for use in open grates has fallen off considerably in late years, according to one of the officers of the company, the general use of furnaces being responsible for this. On the other hand, it seems probable that the increasing popularity of open living-room fireplaces will in time remedy this to a large extent, as fireplaces require much larger backs, 28 by 30 inches being the rule, where formerly 18 to 20 for grates was about the average. The Louisville Fire Brick Works receives most of the clay used in its operations from Grahn, Ky., where it has a plant equipped with electrical machinery throughout. Electric power has proven so successful in this plant that it will be eventually installed in the Louisville plant, although the change is not likely to take place immediately, on account of the cost.

President H. D. Roy, of the Coral Ridge Clay Products Company, stated recently that business had been slack for some days past, the weather being responsible lately for a let-up both in the demand and in operations at the plant. Work is impossible at the plant in severe weather, and in view of the proximity of the holiday season, the plant will probably be closed down within a few days and remain closed until after the first of the year. A number of men live at distant points, and desire to go home for Christmas.

P. M. Crane, secretary and treasurer of the East End Brick Company, reports that plans are being matured by the company by which operations will be continued on the present site for an indefinite period. The plant is now running on several big jobs, but these will be completed shortly, and as there is very little new work in sight, a shut-down over the holidays has been decided upon. The plant will be closed for several weeks, during which the usual overhauling will be done. The weather conditions which have existed for several days, and which will probably continue for some time, combine with a slow demand to make a shut-down not only advisable, but agreeable.

The general outlook for business is rather poor, according to M. J. Bannon, of the Kentucky Vitrified Brick Company and the Bannon Sewer Pipe Company. Both of the plants are running at the present time, but sufficient reserve stock to carry them over for a considerable period, at the present rate of demand, will soon be accumulated, and the weather also threatens to force a vacation more or less extended. There is very little new work in sight which will call for hollow tile or sewer pipe, although the demand for the latter item locally is fair at the present time.

A. P. McDonald, general sales manager of the Kentucky Vitrified Brick Company and the Bannon Sewer Pipe Company, has been making a number of short business trips in various directions, on the trail of business, with fair success, considering the season and the scarcity everywhere of jobs of any size.

A. J. Jungerman, president of the Hydraulic Brick Company, whose plant has been closed for some time, stated recently that the upright kilns at the plant are being torn down and the yard cleared up, the amount of smoke caused by these kilns being the principal reason for their destruction. The downdraft kilns at the plant are to be left standing, however, although Mr. Jungerman has not announced when operations will be resumed.

The Louisville Pottery Company will close its plant, as usual, on Christmas eve, and remain idle until January 2, to make necessary repairs. The company is making large numbers of jugs at the present time, the holiday season always increasing the call for these jugs, as containers of liquid joy. Gallons and half-gallons are the rule. There is little demand for jars, however, the canning and preserving season being over.

The demand for telephone conduits, which is usually good during seasons when there is a good deal of construction work going on, has reached the minimum, according to F. B. Moses, general manager of the Louisville Sewer Pipe Company. Only repair work is done during the Winter months, and this does not call for any large supply of conduits. There is also very little going on in sewer work. The plant will probably be operated until January 15, when it will be closed until business opens up in the Spring.

The plant of the Louisville Brick Company has been closed since December 3, and will remain idle for some time, unless a considerable quantity of unexpected work comes up, which does not seem probable at this time. The company has about a million brick on hand, and this supply will probably be ample to meet current demands for some time to come. Small orders, ranging from one to five thousand, make up about all of the work that is going on just now. The company recently completed deliveries on the big warehouse of the Roche Distillery Company, which was an 800,000-brick job, and one of the largest of its sort of the year in Louisville.

Owen Tyler, one of the largest retailers of high-grade building brick in this section, finds the call for face-brick very small at this season, his other lines of building materials, such as metal weather strips, being much more active. Five crews are kept busy putting in these strips, especially since cold weather began and made their necessity more obvious. Mr. Tyler recently took on the agency of the Jamestown Window Screen Company, of Jamestown, N. Y., and anticipates a good business on this line next spring. Deliveries of light red Bokhara brick for the Puritan apartments, a job calling for 125,000 of these brick, have been completed. The brick are laid in black mortar, and the building is an unusually handsome one. managed and operated by N. B. Wickersham and his son. Ellis Wickersham, is one of the most successful industrial enterprises in that city, handling not only a large local demand but a considerable volume of outside business, shipping as far as Jackson, Tenn. Dry pressed brick are the principal output of the company, although it handles a general line of building materials. Mr. Wickersham is also a general contractor.

Kansas City, Mo.

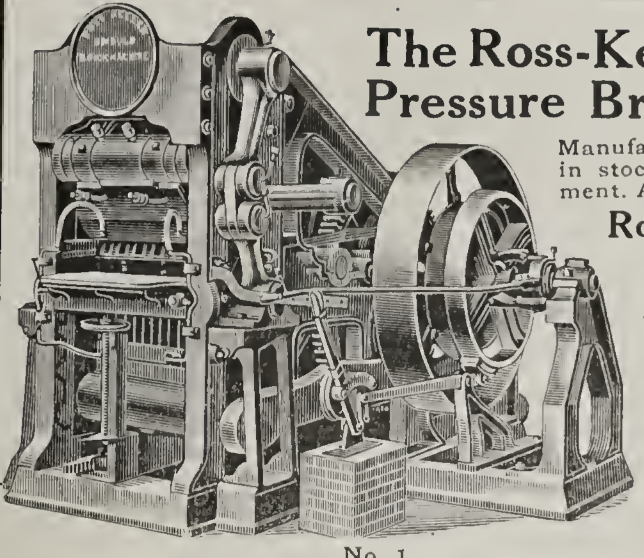
The weather has been open enough to allow building operations to continue and the brick plants of Kansas City are running at full capacity in an effort to keep up with demand. This is unusually good, considering the season of the year, and prospects are for the operation of most of the brick plants throughout the Winter. All signs which have been reliable in years gone by point to an open Winter in the West, even though the law of average might indicate otherwise. None of the Kansas City manufacturers has yet been forced to suspend operations because of the weather. The prospects for 1914 are now getting their share of discussion, being conceded to be of exceptional brilliance. The coming year is hardly likely to give brick men and building trade as many or as severe knocks as did 1913, which will pass down in the trade of Kansas City as only a mediocre twelvemonth, due to many adverse conditions.

The W. S. Dickey Clay Manufacturing Company rather monopolized honors at the Manufacturers' Show, held in Kansas City recently. The big company took one side of the mammoth hall in which the exposition was staged and its display was an eye-opener for many residents of Kansas City, who had been aware of the existence of the company only through hearsay. The exhibit of the company was comprehensive, including lines of sewer pipe, fire brick, hollow tile, and many other varieties of burned clay. D. S. Stophlet was in immediate charge of the company's booths, but officers of the company themselves spent much time in explaining various phases of the exposition to sightseers, of whom many thousand attended during the week. Photographs of the proper way to build a chimney were displayed, featuring Dickey fire clay flue lining. Pictures of the numerous plants of the company in various sections of the country further impressed on the public the importance of the big concern. Among the exhibits were a number of clay lighting fixtures, which were actually used at the Dickey booths for the display of the indirect lighting system. Clay sewer pipe was used as columns for the booth, its strength being demonstrated admirably by this method. Products that excited much interest in view of the extreme drought of the past summer were clay tree savers. These consisted of cylindrical clay pipes, studded with holes. They are planted close to trees and plants and filled with water. This seeps through the holes and feeds the roots of the tree, providing moisture in the hottest weather. It is safe to say that many visitors to the Manufacturers' Show shed tears as they thought of the damage of the past Summer, which might have been prevented by the use of clay tree savers. A huge mass of flint fire clay also was on exhibit, being shipped from the Dickey plant at Versailles, Mo., for the show. An announcement that the clay was capable of enduring heat of 3,000 degrees caused visitors to look at it with some awe. Almost as attractive as the Dickey display at the show was the Dickey advertising campaign in Kansas City papers, run during the week. The ads emphasized the superiority of clay as contrasted to other material and made a deep impression on readers. "Consider the milk crock," ran one of the advertisements, which was illustrated by a drawing of this humble implement, "it absorbs not. neither does it change—Why not? Because it is made of clay, vitrified glazed clay, that is the reason! You can pour acid in it and it won't feaze it! You can shove it into a gas tank and leave it there and it will come out the same as it went in. You can soak it in boiling vitriol till Kingdom Come without the slightest damage." Other ads emphasized the advantages of clay sewer pipe and other clay products made by the company. So successful was the short series of advertisements that many people, interested in clay products, wondered if national advertising along this line would not be entirely worth while.

The Kansas City Terra Cotta & Faience Company was the only other member of the brick and clay trade that took advantage of the Manufacturers' Show. The name of the company is cunningly worked out in clay. Tobacco jars were given away to friends of the company, each being in the shape of a castle, the roof being the lid of the jar. The receptacles cost about two dollars each and were therefore a rather expensive method of securing publicity. Officers of the company, however, were entirely satisfied with results netted.

Thomas Eadie, head of the Eadie Building Supply Company, of Kansas City, is now a grandfather, the first time such a thing has ever happened to the veteran brick dealer. Mr. Eadie is the possessor of an inflated chest as the result of the advent of the youngster, which by the way, happened to be a boy, which fact may be responsible for the pride of the supply man. The newcomer has been christened Arthur J. Eadie, Jr., in honor of his daddy, who is associated with his father in the brick business. Mr. Eadie reported demand holding up nicely, with totals for the year running well above those of 1912, despite unfavorable conditions of the past summer.

The brick plant of Flanagan Brothers, located at First and Michigan, has closed down for repairs, but will probably resume operations late in December. The manufacturers are disposing of their output without difficulty and will again begin work as soon as minor improvements have been made. Most



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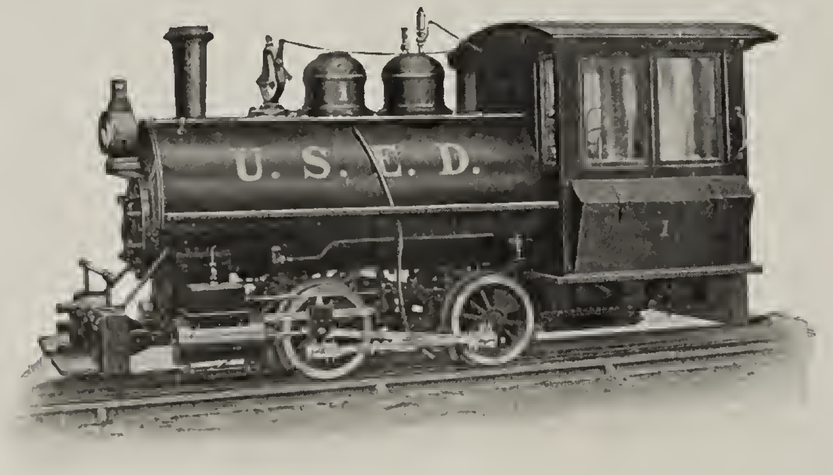

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of the clay is being secured near the surface and this fact is causing some fear that the plant may not be able to work through the entire Winter. The best will be made of the situation, however. Flanagan Brothers recently attained some publicity by returning a young fellow to his home at Waukesha, Wis. Advertisements for the 19-year old lad, who was working for the company, had been placed in Kansas City papers, where they were noticed by members of the firm. The boy, who was heir to a modest sum, through the death of an uncle, was notified and sent back home.

Changes in methods of shipping whiskey have caused a big decrease in business with the Missouri Pottery & Manufacturing Company, Kansas City jobbers, in certain lines. The jug business has been chiefly affected. Owing to the fact that Kansas is a prohibition State, whiskey jobbers of Kansas City ship heavily into that territory. Until recently, this meant a tremendous consumption of jugs. The present plan, however, seems to be to utilize glass funnels as far as possible. Glass is cheaper, allows the contents to be seen and has other advantages which have caused the downfall of the jug. Other lines of business have been good, however, somewhat atoning for the loss in jugs. E. A. Folckner reported a normal holiday trade in pottery, the season being a highly successful one on this product.

Stocks on hand are extremely light with the Lyle Rock Company, which is still operating its two brick plants to full capacity. The company has found no trouble in selling its output, and will probably extend its capacity next Spring. One of its plants is new, being installed immediately following the fire which destroyed the old kiln last May. Like other brick manufacturers, the Lyle Rock Company is now using coal for fuel, though wood is being utilized for drying purposes.

The Pittsburg Paving Brick Company landed a contract of importance recently. The company will provide 16,900 yards of paving at Lake Charles, La., Richard Brothers, of Topeka, Kans., having the contracting work.

Another member of the Western Paving Brick Manufacturers' Association also will be kept busy for some time with a contract calling for 32,000 yards of three-inch vertical fiber at San Antonio, Tex. Rusmore & Gowdy, of Kansas City, are the general contractors.

San Francisco, Cal.

The general recession in construction operations, which has affected the entire country, and which began to make itself felt here early in the Summer, is still a factor all along the Pacific Coast as far as city building is concerned. With the single exception of San Francisco, every important city on the Pacific Coast shows up for the month of November with the lowest building record in several years. The falling off as compared with October is not, however, very marked in most cases and some predictions are made that the bottom has been reached. In fact, the dropping off at this season is to be expected even in ordinary times, and in itself means little more than the approach of Winter. In San Francisco the situation as to the future is decidedly encouraging. The fact that the total volume of the building permits for November are slightly larger than for October and well up toward the average for the earlier months of the year indicates that the financial depression of the country has already done its worse as far as San Francisco is concerned. The fact that the official record indicates a falling off of about forty per cent from last year month by month, is probably rather more than effset by the large volume of municipal, state, federal and Panama Exposition building which is now going on and of which no account is taken in the official records, these latter being restricted to private work for which fees are charged.

The market for common brick is very dull, the supplies on hand being more than sufficient to take care of the rather limited demand. There is a good deal of complaint as to prices, which are said to be below the cost of production in some cases. As a result, a number of plants have shut down for an indefinite period, and it is reported that some of them will be dismantled. While there is just now some little demand for city work, there is more than enough brick on hand to meet this and there is no immediate prospect of a really active market. The demand for terra-cotta for building purposes is better, and some fair sized jobs for public buildings are reported. Other work is in prospect, and the demand is expected to continue about as at present for some time. There is some little call for sewer-pipe all the time but the market as a whole is in poor shape as compared with a year or so ago.

The Board of Public Works of San Francisco is now receiving bids for the terra-cotta and brick work on San Francisco's proposed new City Hall. The estimated cost of these items is $37,000. Bids will be opened on December 17th, and the contract will be awarded soon after.

A movement is under way to lay a sewer in the Great Highway in San Francisco, though no definite plans have been made for the work.

The pottery plant of the Western States Pottery Company at Richmond, Cal., is reported to be tied up by a strike of potters and engineers. The trouble arose in the engineers' department, the potters to the number of forty-eight going out on a sympathetic strike. The trouble will, it is thought, be adjusted in a few days.

The City of Richmond, Cal., has adopted plans for a sewer system covering the entire annexed districts of Pullman, Stege, East Richmond and El Cerrito. A system of six miles of sewer and a main outfall sewer are included, the total cost to be about $150,000.

The Bernice Pauahi Bishop Estate of Honolulu, T. H., has decided on the erection of a million dollar brick and steel building in that city. A considerable quantity of brick and terra-cotta will be required, and as this will have to be imported, San Francisco manufacturers are looking forward to supplying it.

N. Clark & Son, brick and terra-cotta manufacturers of San Francisco, report securing two good contracts for work in Oakland, Cal. The company will supply matt-glazed terra-cotta for the Carlson Snyder and for the Durant school buildings in that city. This company reports a steady but rather small movement of sewer-pipe all the time, most of the demand coming from country points.

The Oakland Bank of Savings of Oakland, Cal., has begun suit to foreclose a mortgage of $93,400 against the California Pressed Brick Company, which owns a plant at Niles, Cal. The company has been in litigation for some time.

The Pioneer Brick Company, operating in Tulare County, Cal., with headquarters in Viscalia, has bought one hundred and sixty acres of clay deposit in Kern County near Bakersfield. It is intended to utilize the deposit for making fire brick and other products.

Philadelphia, Pa.

Brickmakers in Philadelphia and vicinity report a fair volume of business in common brick and an increasing demand for special brick, to conform to sizes shown on the plans of various office buildings and other large structures. The amount of fireproofing material used in the past three months has compared favorably with the figures for a similar period in 1912.

Vitrified paving brick enjoys a strong demand and the factories that are making this material are still running to full capacity, not only to supply contracts now under way, but to care for work that will be started shortly. The demand has been increased by the large amount of suburban street work that has gone to brick, and this will be further augmented by the fact that the streets already paved are giving splendid satisfaction.

Sewer-pipe and terra-cotta plants are also busy and the men in charge are looking forward to a steady and insistent Spring trade. The amount of terra-cotta roofing, tile and terra-cotta trimming for brick structures is also growing and the outlook is encouraging.

The Mack Manufacturing Company will keep its plant running all Winter and will close the largest in its history, in point of sales, when the chimes ring the ending of 1913.

Talks with the sewer-pipe fraternity brings the impression that the past eleven months' business has been right, in point of volume, but somewhat disappointing in the important items of prices and profits. This seems to be the usual case with sewer-pipe manufacturers, but how can it well be otherwise? In the early Spring, when the advance prices and discounts are published, the stocks are usually large and work is not well under way. How many orders are booked in strict accordance with the published lists? Take for instance, the printed notice issued to go into effect May 12th of the present year—look it over, and make comparisons with the actual amounts at which the bulk of the orders were taken. Enough pipe is used throughout the year to keep all of the plants busy—yet the buyer seems to have acquired the art of getting low prices, no matter what the demand or how meagre the supply.

In the light of what has gone before, it is well to look to what is still to come. Now is the time to make prices for the new year—and make arrangements that will do their part in keeping these prices at a point that will bring a profit to the men who have invested their money in the manufacture of clay sewer-pipe.

Make 1914 a profit year.

Washington, D. C.

This has been one of the slowest years in the brick and clay products lines in the capital city that was ever known. This is laid to various reasons. Some say the uncertainty of the political doings has kept things backward. One of the main causes is the fact that Washington is overbuilt and that no more buildings or residences are needed for some time. The outskirts have been well built up and a great deal of brick and other clay products are used here, probably more than most cities, because frame buildings are tabooed by the building laws. Every line of business is very slow here and all merchants, manufacturers, jobbers and retailers are complaining.

A scheme of beautifying the city has been approved and some work is now being done to carry out these ideas. The idea is to tear down all the buildings between the Union station and the Capitol and make a park of it. Then it is planned to tear down all the buildings privately owned on the south side of Pennsylvania avenue, making a parkway from it is planned to continue Rock Creek Park on down to the there to the Mall and removing all buildings in between, thus making a parkway from the Capitol to the White House. Next White House. All the dwellings in the alleys are to be removed and new sanitary brick houses to be built for the use of these people. The new Government buildings to be erected will in time be built on the south side of Pennsylvania avenue, which will be a parkway running alongside the Mall. Most of the government buildings will be of granite, marble, etc., but in all, brick, terra cotta and fireproofing materials are used. Hugh J. Phillips, a brick manufacturer, has the contract to remove all the buildings between the Union station and the capitol. This has tended to put a lot of second hand brick on the market.

The brick business has been in such poor shape that the prices were reduced from $8.50 to $7.50 and not much demand. Few, if any, concerns have made any money. Only two or three plants have run steadily. Most of the plants have been closed part or all of the year, and if things do not improve will not open next year. This city has always been a good one for brick, the demand for common and face brick has been good in other years. Terra cotta has been a good material and is well liked.

There is practically no manufacturing done in Washington, at least not on a large scale, and it is not encouraged in the city, as it is a residence city only and the capital of the country. It is not a jobbing point, but is a good retail center.

The Hydraulic-Press Brick Co., with offices in Washington

To Prevent Scum Appearing on Your Brick, Terra Cotta, Etc., Use

R. H. Precipitated Carbonate of Barytes

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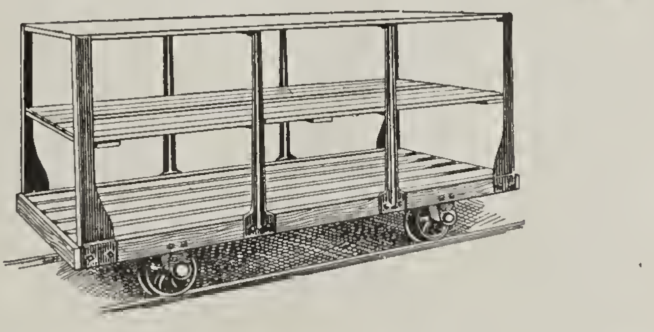
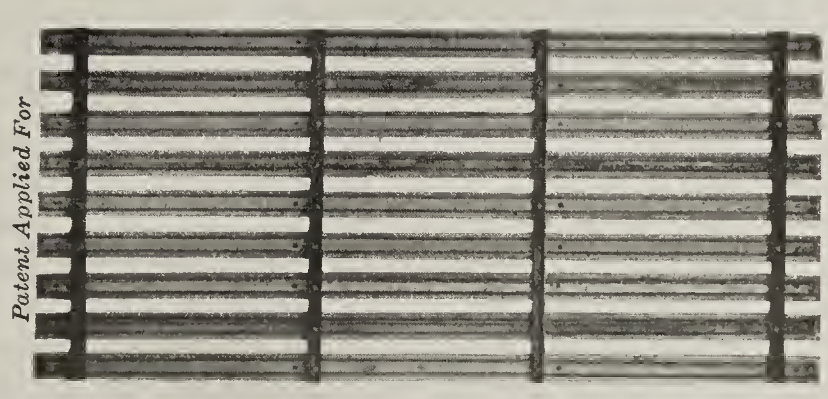
Over 4000 in use in Mason City



Write for particulars about them and the Vulcan Improved Combination Wood and Steel Decks.



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Also grey iron castings for all kinds of brick and tile machinery.

VULCAN IRON WORKS COMPANY
MASON CITY, IOWA

The "Martin" BRICK MACHINERY

Modern YARD SUPPLIES

Soft-Mud or Stiff-Mud Processes

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Dry or Wet Grinding Pans

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Clay Cars--Dryer Cars

Hoisting Drums

The Henry Martin Brick Machine Mfg. Co.

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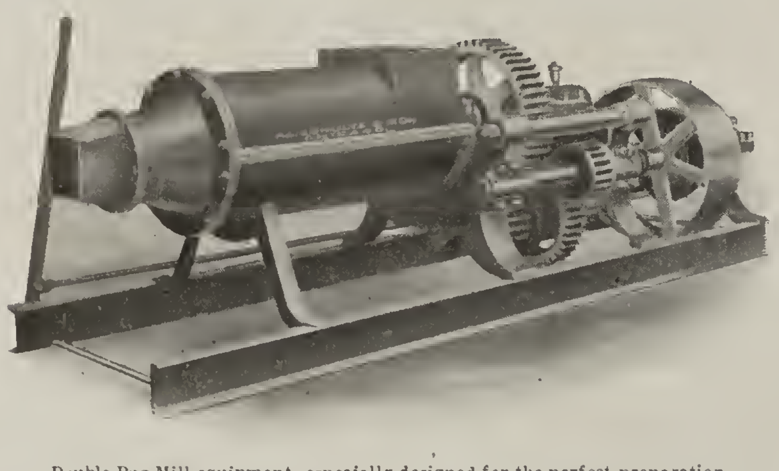
For Brick, Tile and Terra Cotta Plants

We make a specialty of designing and furnishing complete machinery equipment for all kinds of clay-working plants, including expert engineering service in supervising erection and installation.



Double Pug Mill equipment, especially designed for the perfect preparation of material in the manufacture of terra cotta.

SCHULTZ HEAVY DUTY FRICTION CLUTCH

suitable for all purposes. If you are having clutch trouble, write to us and we will show you the way out of your difficulties.

Complete brick plants furnished promptly, including auger machines, pug mills, clay cars and granulator shafts.

Cutting and cut steel gears always in stock for brick machines, also granulator knives.

Remember, we are brick works engineers and will be glad to advise you regarding any improvements or repairs which you contemplate.

A. L. SCHULTZ & SON, 1675 Elston Ave., Chicago

Telephone Monroe 1629

We also make a complete line of Power Transmission Appliances, Engines and Boilers.

and Baltimore, and main office in St. Louis, have branch offices and brick exhibits in fourteen cities. A. B. Lyon is in charge in this city and T. B. Amiss, Jr., in Baltimore.

The report of W. H. Whittaker, superintendent of the workhouse at Occoquan, show that the indeterminate system is the best. The brick plant burned out 3,530,437 brick, which sold at the rate of $6.00 per 1,000. Congress has appropriated $25,000 for a new tug boat and $12,000 for barges, in order to take care of the output of the brick plant, the stone crushing plant, the transportation of coal and fertilizer for the land. The brick plant will also make drain tile, paving blocks and partition tile. The construction of the brick plant, stone crushing plant and other improvements cost $77,742.

The Virginia Brick Company, Washington, D. C., says business is very slow and that 1913 was the dullest year since it had been in business. Brick is selling for $7.50 and there is much uncertainty of getting the money. The city is overbuilt, the real estate market demoralized, the change of administration has hurt trade and as many people build on borrowed money, employees do not know where they are at. This plant is in Alexandria, Va., have plenty of clay for years, good facilities for making brick, but no demand. The plant has been shut down for some time but turned out 8,000,000 to 10,000,000 brick this year.

Minneapolis, Minn.

Warm weather lasting well into the Winter season has made it possible to finish outside work on many important new buildings in the Northwest, and this fact, builders say, has solved the Winter labor question. Reports indicate that newly inclosed buildings will be pushed right through to completion. Instead of being "laid off" at the approach of Winter as usual, brick and tile layers have been kept busy right up to date, and inside work will last right along through the Winter months, and much work will also be provided in the building interiors for common labor.

The principal buildings which will require inside work in Minneapolis during a good part of the Winter include the new McKnight office building, Second avenue and Fifth street south; the Walker-Burton commercial building, Seventh street near First avenue north; The Minneapolis Trust company building, on Fifth street; the new North High school; the new addition to the city hospital the new chemistry building for the University of Minnesota; the reconstruction of the burned Mines building at the State university; the factory of the National Lamp company, and numerous other buildings of smaller size. The Pence Auto company's building which took one million common brick; the Janney-Semple-Hill warehouse, taking 150,000 common brick; the Carnegie Library building, taking another 150,000; the Soo railroad shops at Shoreham, a surburban industrial district, 200,000; a large residence for A. B. Snyder, 150,000, the Wells Memorial club, 11th street and Western avenue, 200,000, all common kiln run brick, have been furnished by local brickmaking plants. The new Minneapolis Athletic club building will also be constructed of common brick, and piling is being driven for the large assembling plant for the Ford Motor company at Fifth avenue north and Fifth street.

There is also the Crex Carpet company's new factory, the new coal distributing plant of the Pittsburgh Coal company, a theater on Hennepin avenue and three new Christian Science churches are in process of building.

Minneapolis brickmakers and jobbers and factory agents are busy at this time as they have been at any period during the season, and are looking for a prosperous season for 1914.

One noticeable thing is the tendency of inquiries regarding the comparative cost of fireproof buildings for residences. Hollow-block is being talked more than ever in Minneapolis, and there is likely to be an increase in this kind of construction next season. Prospective house builders are learning that the fireproof idea is not so expensive as has been the popular belief. They are gradually realizing that the saving in painting and roof repairs, the saving in metal lath, both inside and out, the lower insurance rates, the likelihood of higher appraisals for loans, make up for the extra cost, which, however, is not high in this locality, not amounting to over ten per cent of the cost of the superstructure. Another factor better known, is the rapid progress that can be made in laying walls and partitions. Architects are also realizing that to be progressive they must know more about hollow tile and brick construction, and plans are being turned out that call for fireproof structures of moderate cost, as a result of the investigations that have been made very recently.

Indianapolis, Ind.

Business is at a standstill in Indianapolis, two causes bringing about the condition. The first is the cessation of building activity due to the strike on between the Building Trades Council and the Bricklayers to force the latter into affiliation with the American Federation of Labor, and the other is the local strike of teamsters which is preventing deliveries.

The Contractor's Association and the Builders' Exchange attitude toward the jurisdictional troubles that beset the workmen, is seemingly one of indifference, they refusing to take sides either way. The Building Trades Council is making what appears to be a futile effort to organize local bricklayers in a separate organization which will affiliate with them. They are offering the contractors workmen from this new organization, but the contractors, pursuing the hands-off policy, are refusing to put them to work. Most of the men in the new organization are negroes, against whom the older Bricklayer's organization had drawn the color line.

The teamsters' tie-up of the rolling stock of the streets was complete for a few days, but the backbone of the strike has been broken. Some of the firms have signed up and a majority of the men are back at work. Shipments were held in the railroad yards and at the city's edge for some time for lack of delivery facilities. The question of delivery is no longer a problem, and the congestion of the railroad yards is gradually being adjusted. When the labor dispute is settled the city will be ready to resume a normal activity for this season of the year. Considerable new work is being planned, but no contracts are being let.

Columbus, Ohio.

In sympathy with busines conditions throughout the country, there is a slight let-up in the brick and clay products industry in Ohio. At this time of the year there is usually a lull, but the present quietness is more marked than usual. Building prospects are excellent in all of the larger cities and towns in the Buckeye country and that fact is expected to help in maintaining a volume of business in the industry.

Brick and tile manufacturers in Ohio are compelled to come in under the Ohio compensation law which was enacted by the last session of the Ohio Legislature and which becomes effective January 1, 1914. The law met with considerable opposition at the start but many of the manufacturers are looking at it in a more calm spirit now. It is estimated by one large face brick manufacturer that the increased cost of production will be about 3½ cents per thousand. Under the liability insurance plan the cost of accidents was about 5 cents. Under the law each company remains on its own basis to a certain extent and the net result will be a greater attention to the safety of employes than under the old plan. A movement is on foot which has been joined in by manufacturers of clay products for a conference of manufacturers and employers of labor at Columbus before the first of the year to study the new law.

The Iron Clay Brick company of Columbus which operates a plant at Shawnee has been paid the loss of its payroll amounting to about $3,800 by the United States Express company. The payroll was lost in its shipment from the Columbus office to the plant at Shawnee.

Employes of six brick plants around Shawnee and New Straitsville, Ohio, have submitted their demands to the plant managers. The present scale expires December 31, and the men are asking for an increase in wages from 8 to 14 per cent.

The Federal Clay Products Company of Mineral City, Ohio, will start work soon on the erection of a modern brick plant on the site of the plant which was burned to the ground a few weeks ago. The new plant will cost $60,000 it is said. The company asked the state to investigate the fire which destroyed the original No. 1 factory on the ground that the fire had been of incendiary origin and deputy state fire marshals visited the scene of the fire, but nothing definite has resulted from the investigation so far. The strike which had been in progress for several months remains unchanged with most of the strikers at other employment. The company is running its remaining plant in Mineral City with nearly all outside labor.

The Buckeye Fire Clay Company of Uhrichsville, Ohio, through its secretary Attorney W. B. Stevens closed a deal for the purchase of 108 acres of coal and clay and 28 acres of surface from the heirs of Jacob Huston. The consideration was $7,000. The land is located along the road south of Uhrichsville leading to the pumping station. The company has had drillers at work for the past 10 days examining the thickness of the veins of coal and clay with a view to closing the deal. Secretary Stevens said that at present the company has no plans for the enlarging of its plant, but because of the rapid development of the fire-clay industry and sewer pipe business in this vicinity, it was thought wise by the directors of the company to secure this property with a view to a later increase in its manufacturing facilities.

Machines and Equipment

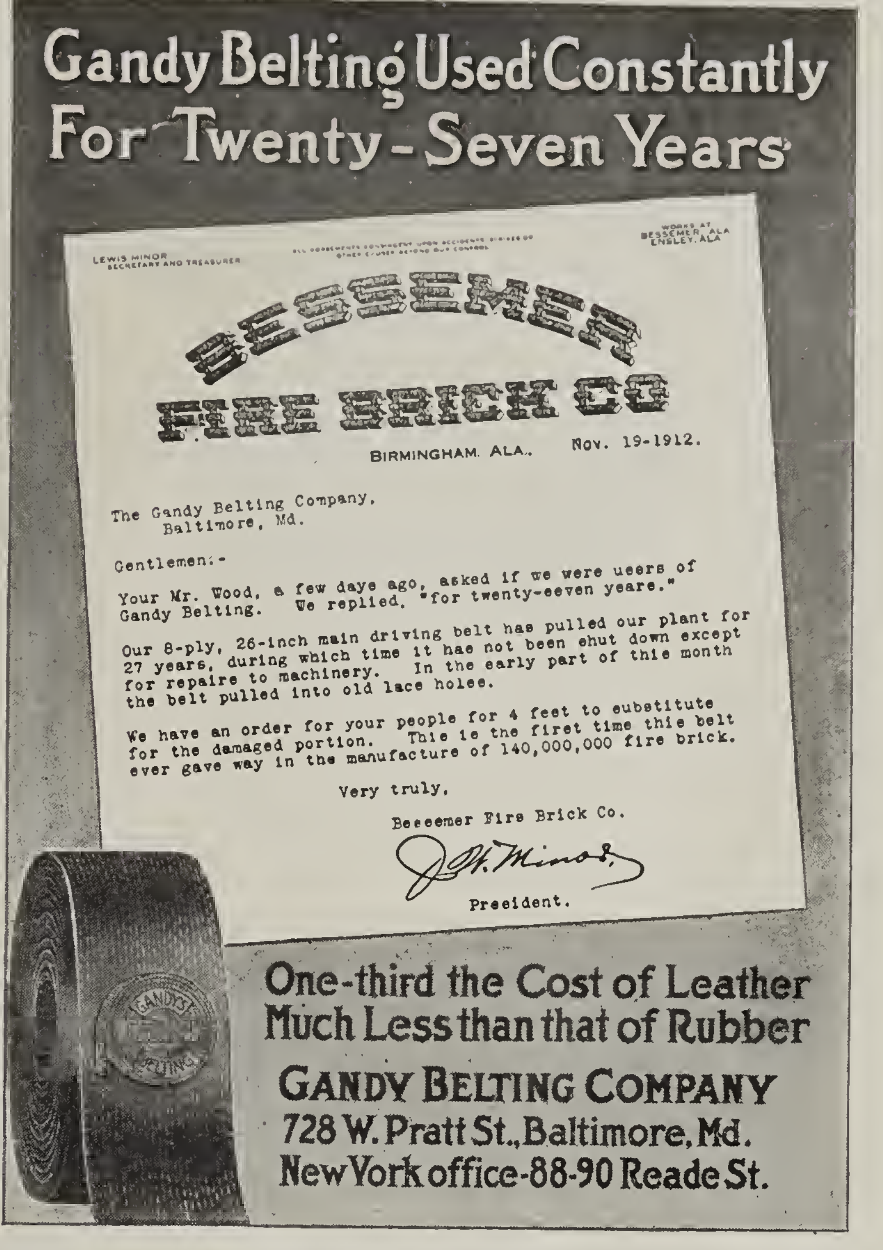
By writing to the Bureau of Foreign & Domestic Commerce, at Washington, D. C., and giving file No. 12087, manufacturers of steam shovels, dump cars and engines may obtain the name and address of a foreign concern which desires to enter into correspondence on the subject, with a view to purchasing.

Plans Extensive Improvements.

L. G. Rose, of the Minneapolis Clay Brick Company, Minneapolis, Minn., was a visitor in the editorial rooms of "Brick and Clay Record" a few days ago. Mr. Rose's company is contemplating some improvements on the two or three plants operated. All the yards are open-air yards and the improvements contemplated include the consolidation of the three plants, the erection of modern fire-proof buildings, the installation of a waste heat drying system and new kilns—probably gas producer continuous.

Urges Early Orders for Conveyors.

The Mathews Gravity Carrier Co. of Ellwood City, Pa., requests "Brick and Clay Record" to announce that owing to the numerous advance orders now being placed by brick manufacturers for the Mathews Standard Gravity Brick Conveyors, those who contemplate purchasing this modern equipment should make arrangements to get their order on file at once. Orders can be placed for Spring delivery if desired, which will give the Mathews company plenty of time to make up the order for immediate delivery when wanted. This is the only way the company can guarantee satisfactory service to the trade, as its experience the past year has demonstrated that



Gandy Belting Used Constantly For Twenty-Seven Years

LEWIS MINOR
SECRETARY AND TREASURER

WORKS AT
BESSEMER, ALA
ENSLEY, ALA

BESSEMER
FIRE BRICK CO

BIRMINGHAM, ALA., Nov. 19-1912.

The Gandy Belting Company,
Baltimore, Md.

Gentlemen:-

Your Mr. Wood, a few days ago, asked if we were users of Gandy Belting. We replied, "for twenty-seven years."

Our 8-ply, 26-inch main driving belt has pulled our plant for 27 years, during which time it has not been shut down except for repairs to machinery. In the early part of this month the belt pulled into old lace holes.

We have an order for your people for 4 feet to substitute for the damaged portion. This is the first time this belt ever gave way in the manufacture of 140,000,000 fire brick.

Very truly,

Bessemer Fire Brick Co.

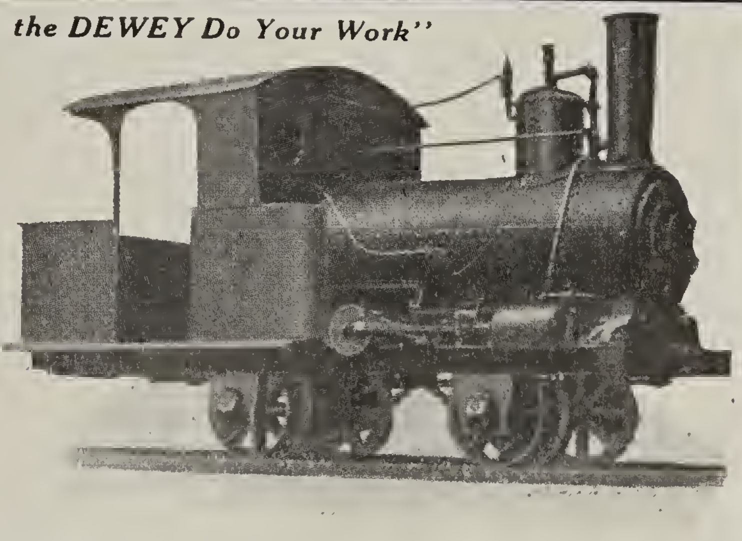
J. W. Minor,

President.

One-third the Cost of Leather
Much Less than that of Rubber

GANDY BELTING COMPANY
728 W. Pratt St., Baltimore, Md.
New York office-88-90 Reade St.

"Let the DEWEY Do Your Work"



The Boiler of the DEWEY

The Borden Brick & Tile Co., Goldsboro, N. C., is using a DEWEY locomotive. It discarded the mule-driven car and declares it not only got an increased efficiency but reduced the cost of hauling.

This concern hauls eighteen cubic yards of clay to a load on a trip of one and a half miles.

How many mules would it take to do this same thing and how long would it take them to do it?

It is our own special design. It has unusually large capacity, is a quick steamer, and is economical in fuel consumption.

These three characteristics have made the DEWEY especially adapted to clay pit work.

Strong, Safe, Long-Lived

The DEWEY boiler is designed to reduce to a minimum the numerous angles and corners and pockets which serve as collecting places for mud and scale—distressing features about every standard locomotive boiler.

The DEWEY boiler, therefore, is stronger, safer and longer-lived and does BETTER work than the regular types.

The DEWEY sells for several hundred dollars less than any of the standard type locomotives of the same size and weight............... $1200

DEWEY BROS.
Goldsboro, N. C.

Save Horse Power

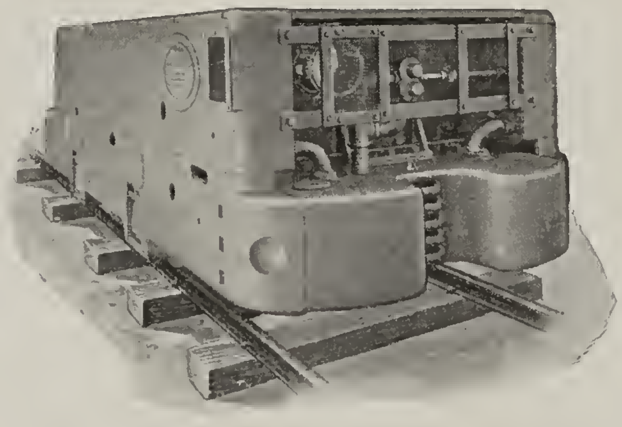
Good horses are expensive; so is feed. You want to get maximum results from your equipment.

Increase the efficiency of your delivery department by adopting **Martinsburg Brick Wagons.** You can haul 1/3 more and save 20 to 30 minutes unloading and *without breaking or chipping the brick.*

If you're from Missouri—ask us.

Auburn Wagon Co.
450 Race Street
Martinsburg, W. Va.

Gasoline Motors



Over 300 in Use—
Used by 150 Companies.
Used for Underground
or
Surface Haulage—
2½ to 16 Tons Weight.

Geo. D. Whitcomb Co.
Rochelle, Illinois

it is impossible to take care of the rush which usually commences with the resumption of manufacturing early in the year. Many brick manufacturers waited too late this year to place their orders, and some orders had to be cancelled late in the season. There is every reason to believe that the labor situation will not improve next year and that competent men will continue to be scarce. To be on the safe side, take this matter up now, while you have time to investigate the subject and come to a decision. In order to get quick action write the Mathews Gravity Carrier Co. a careful description of your product and submit to them a rough sketch showing lay-out of plant. indicating position of kilns, transfer track and sidings. Give outside and inside diameter of kilns, distance from siding and location of kiln openings and heights of same. Also state whether siding is on a level with kiln floors or depressed. In describing the brick manufactured state kind of brick, sizes and number of shades.

Writes on Rope Drives.

A recent issue of the "Dodge Idea," one of the best house organs printed contains as its leading article a paper on "Rope Drives," by W. C. Kirkpatrick, the Chicago brick engineer. Space prevents republication in this journal, although it is worth it, but we are sure the publishers, the Dodge Mfg. Co. of Mishawaka, Ind., will send anyone a copy who requests it. It is worth the asking.

Reports Good Fall Business.

F. W. Dennis, inventor and builder of down draft kilns and dryers, was a visitor in this office recently. He spoke most encouragingly of the way the season's business has opened up and has a number of contracts under way—more than in any previous year at this season.

Prepares for a Busy Season.

The J. D. Fate Co., Plymouth, Ohio, are preparing for one of the busiest seasons in years. Special machines have been installed to take care of an increased output and to prevent disappointments.

Freight Tariffs

Rate Making and Classifying.

The present system of rate making and classifying articles has grown so burdensome because of the lack of uniformity and simplicity in both, that much thought has been given to its improvement. A committee of the carriers has, since 1908. been working on uniformity of description of articles and on the rules and regulations covering their movement, but not considering the matter of uniformity in rating. There have been plans submitted as to improvement in the rate structure involving the percentage principles and taking either class rates as units or the rates on certain staples, probably grouping all other traffic in the latter case under five heads, with subdivisions when necessary. The latest plan is the Universal Freight Rate Base Sheet, the authors of which are W. B. Barr and E. E. Williamson, of Washington, D. C. They make use of a single unit, and proceed from this to give 46 classified ratings. stated in percentage terms. Numeral and letter classes are not used. Their proposal is to first prescribe the form of rate statement and, on the adoption of this, to construct a uniform classification to govern it, making use of the same form of expression as to designation of an article, in the classification, as is used in the rate sheet, except in the case of such commodity rates as may be necessary. For the convenience of both shipper and carrier, these latter can be stated in cents per 100 lbs. The rate sheets used are to be a part of each classification and carried in the back of it, and as both the classification and the rate sheet use the same form of expression, any shipper knowing his base rate, can find easily any other rate. and thus in concentrated form have a rate file in one volume. There is no doubt but that its adoption would effect a saving of from 66 per cent to 80 per cent in publication for the carrier and give ease of reading and the saving of time to the shipper. This is the first exhibit coming to our notice where the proposed rate structure was based on a single unit, and seems in no way to abridge the carriers' right as to initiative in rates and the grouping of items. Apparently it limits protests made to the Interstate Commerce Commission to two things: First. the reasonableness of any base rate; second. the justice of the assignment of any article to its percentage column, for when a base rate is chosen and is admitted reasonable, the percenttage relations of other rates can not be attacked, because they are arithmetical; the question will be as to the propriety of the assignment of the commodity to the percentage under which it is designated. and not to the justice of the rate. Much interest has been awakened by this proposal and we understand it is generally endorsed by leading men among shippers and carriers. Unless some voluntary action is taken by the carriers for improved conditions in rate and classification making, Congress is certain to act soon and possibly restrict the freedom that ought to exist between carriers and shippers. particularly as to conferences on rate matters. Flexibility and elasticity of expression seem a valuable feature in the Universal Freight Rate Base Sheet, as compared to the paucity of expression now existing.

For years the so-called "Cashman long distance" tariff bill has been held up by the city newspapers in Minnesota. as a bugaboo for the small town manufacturers and shippers; now that the bill is to become a law. however. the wails that are going up from the large centres of population would indicate that the shoe was on the other foot. In an interview given the Mazeppa (Minn.) "Journal," A. L. McCray, secretary of the

Barr Clay Brick and Tile Company, of Wanamingo, Minn., stated that the rates, which go into effect January 1, 1914, would benefit his company and, he thought, many other shippers in his neighborhood. The interview, in part, follows:

"Like many other small town manufacturers," said Mr. McCray, "I had been scared, somewhat, by the 'bear' stories sent out by the Twin City newspapers, which were to the effect that small factories in the country towns would be wiped out of existence by the new rates. To my surprise, and, I may add, pleasure, I found that the new rates were more favorable to the Barr Company than the old ones; I found that companies making brick near the cities have been given but a trifle greater advantage than they previously had, and that many other towns, previously inaccessible to us on account of high freight rates, can now be reached economically. For instance, it is now cheaper to ship to La Crosse than to Winona, under the old rates. Under the Cashman rates, Winona will have the better rate, thus giving that city the advantage of cheaper building material from its own state."

The Toledo, St. Louis & Western is one of the recent "prize winners" in the matter of increasing freight car efficiency. It made an average freight car movement of 40.4 miles per day during a recent five-months' period, with the loaded mileage for the period being 75.3. This is a remarkable record, and is doubtless an evidence that the efforts of the railroads to improve upon the old average of about 26 miles a day are bearing fruit, beginning, as should naturally be expected, with individual efficiency.

Changes in freight rates, affecting clay products, which have become effective since our last issue, as given below:

From Eastern Points.

From Middletown, Pa., Common Brick, to Millville, N. J., $1.75 per net ton.

From Price Tower, N. J., Clay, to Bordentown, N. J., $1.25 per net ton.

From Southern Points.

From Oliver Springs, Tenn., Brick, to Alabama City, Ala., 9c per cwt.; to Albany. Ga., 12c per cwt.; to Chattanooga, Tenn., 5c per cwt.; to Columbus, Ga., 10¾c per cwt.; to Dublin, Ga., 11¾c per cwt.; to Waycross, Ga., 12¾c per cwt. This tariff applies to Southern points other than those here given.

From Middle West Points.

From East Peoria, Ill., Brick, to Bettendorf, Iowa, $1.00 per net ton.

From Sioux City. Iowa, Brick, except bath and enameled, but including fire-clay, to Diamond, and Kansas City, Mo., 10c per cwt. This rate is effective in either direction.

From Western Points.

From Brickton, Girard, Humboldt, Independence, Iola, Neodesha and Parsons, Kas., and from Liberal. Mo., Brick, common, paving, pressed and shaped—and T rail paving blocks, to Argenta, Blytheville, Hoxie, Jonesboro, Little Rock, Pine Bluff, Nettleton. Stuttgart, Tenth St. Station, Tie Plant and Walnut Ridge, Ark., 12c per cwt.

From Caney, Chanute, Coffeyville, Fredonia and Independence. Kas., Enameled brick, to Cuba, Kas., 9½c per cwt.

From Caney, Iola. Cherryvale, Coffeyville, Carlyle, Chanute, Humboldt, Kas., and other Kansas points, Brick, to Devol, Okla., 13.7c per cwt.; to Humphreys, Okla., 12.7c per cwt.; to Altus. Okla., 12c per cwt.; to Victor. Okla., 12.7c per cwt.; to Duke, Okla., 12.7c per cwt.; to McQueen, Okla., 12.9c per cwt.; to Martha and Hester, Okla., 12.3c per cwt.; to Mangum, Okla., 11⅓c per cwt.; to Carter, Okla., 11.5c per cwt.; to Elk City, Okla., 11.2c per cwt.

From Coffeyville and Independence, Kas., Brick to Kansas City, Mo.. 15½c per cwt.

From Fredonia, Kas., Enameled brick, to Beatrice, Neb., Council Bluffs, Iowa, Lincoln, Nebraska City, Omaha and South Omaha, Neb.. 15½c per cwt.

From Winlock. Wash., Brick, except glazed or enameled, common. pressed, paving, fire, hollow and building and clay blocks, to Portland, Ore., 6c per cwt. This rate is effective in either direction.

The Letter Box

Clay Show Did Its Share.

F. L. Hopley, secretary of the Clay Products Exposition Co., resents our manner of explaining the remarkable showing of burned clay products in 1912. We had attributed most of the $10,000,000 increase to the widespread publicity movement among clayworkers, but neglected to give the clay show credit for its helpful influence and the great part it played in the work. Friend Frank's criticism is well-taken, for, although failure to refer to the clay show was purely an oversight, it was inexcusable, as all of us know it did more than any other one cause to boost burned clay. We want to say, however, that if our comrade will refer again to the editorial he objects to, he will note that we do not "appropriate the credit" for $10,000,000. for even if we felt that our efforts of the past two years had much to do with it, our modesty would have held us in check. Here is Mr. Hopley's letter:

> I want to object to your recent statement in "Brick and Clay Record," in which you took credit for the $10,000,000 increase in the business of the clay trade during 1912. It is not just to the business men who put up the money to finance the Clay Products Exposition that you do not

Don't Strain and Tug

The day is past for any clayworker to break his back trying to turn old fashioned turntables. Don't waste time and energy with a table that balks and has to be moved with a crow bar or a blast of dynamite.

Use "Universal" Turntables.

They run on a serpentine track with ball-bearings. They cannot clog up—they turn seventy-five per cent easier than others—they are self-oiling and dirt proof, and they never get out of order.

We'll tell you prices if you'll send the wheel base of your cars and the gauge of your track. Ask for the "GRAY BOOKLET," at least.

Canton Foundry & Machine Co.
Canton, Ohio

WHY NOT CUT YOUR COAL BILL
20 TO 25 PER CENT ?

IT CAN BE DONE
FOR IT HAS BEEN DONE
BY INSTALLING THE

Grateless Gravity Feed Fire Box

READ THIS LETTER CAREFULLY

Belle Plaine, Iowa, June 21, 1913.

Mr. Paul Beer,
Des Moines, Ia.

Dear Mr. Beer:

Your letter inquiring as to my experience with the Grateless Gravity Feed Firebox received. Replying thereto will say that the writer has had experience with this furnace both at Des Moines and Belle Plaine. In Des Moines we replaced our horizontal grate furnaces with the Grateless Furnace with very satisfactory results. It is the nearest approach to a smokeless furnace of anything I have ever seen and we made a fuel saving of from 20 to 25 per cent.

With kind personal regards, I remain,

Yours very truly,
RELIANCE BRICK & TILE CO.,
By (signed) F. W. Stuart.

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Plant economy is the watchword of the new year. The man who makes his ware at lowest cost will dominate his market no matter what the financial conditions may be. Investigate.

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is not an experiment but a tried and trusted appliance that the makers are not afraid to

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To heat the feed water to the *boiling point* (210 to 212 degrees) with the exhaust steam without causing any back pressure, *also to extract the oil from the exhaust*, so that the exhaust steam after being passed through the heater can be used for other heating purposes, and the water of condensation for the heating system be returned to the boiler without the *additonal expense* of an *eliminator*.

We are so sure of the OTIS that we agree to pay all cost of a trial—freight, cartage, piping, etc.—if it fails to do all we claim for it.

Catalogue and Prices at Your Service

The Stewart Heater Company,
33 EAST DELEVAN AVENUE - BUFFALO, N. Y.

give them any credit whatever for this increase in business.

We understand the Government ascribes the increase to publicity given to clay products. Surely the Clay Products Exposition was the biggest and most important publicity work ever put on, and the men who were responsible for it should not be denied the credit.

While you have been doing good work for clay products, we find by looking at your publications during 1912, that it was in the Fall of that year when you inaugurated your campaign boosting clay products, and consequently, the increased business in 1912 could not have resulted from what you did in the Fall of that year.

Clearly, the exposition is entitled to the most of this credit, and we are surprised that you should take the credit away from the exposition and appropriate it to "Brick and Clay Record."

We might add here that this journal really began its aggressive campaign for a nation-wide publicity movement much earlier in the year than Friend Hopley would give us credit for, although it is admitted that not until later did we get into the full swing.

We might also suggest that "Brick and Clay Record" was one of the three or four stockholders that stood sponsor for the clay show and through its readiness to be financially responsible for all indebtedness, with R. C. Penfield and others, made possible the exposition.

Wants to Convert City Commission.

Ernest Beutler, manufacturer of face brick, drain tile and hollow brick, at St. Cloud, Minn., is another brickmaker who believes in co-operation. He has a paving brick problem in his home town and wants help. His letter follows:

> Please send the November 4 issue of "Brick and Clay Record," containing the "Creosoted Block Failures" article to P. J. Seberger, 12th Ave. South, St. Cloud, Minn. Mr. Seberger is mayor of our city, head of our city commission and secretary of our commercial club. He seems to be interested in the paving of our streets here, and. so far, St. Cloud has only experimented with macadam on a few streets, which has not worn well, and the paving is to be changed either to concrete, creosote block or something else.
>
> Now, we have had speakers at our Commercial club meetings—an expert on concrete and one on creosote block. I would like to have the Commercial club members also hear about paving brick and thought it would be well to try to get ideas before Mayor Seberger. This can be done, I think, by letting him read about the creosote block failures printed in your Nov. 4 issue and also the article in your Oct. 7 issue on the "Truth About Wayne County Roads."
>
> Please give me the address of a good speaker who could represent the paving brick association and address our Commercial club the first Tuesday in December.

Friend Beutler shows the proper spirit and we regret his letter came too late to enable us to put the matter before the National Paving Brick Manufacturers' Association. If it's still in season, suppose you write to Will P. Blair, secretary of this association, Locomotive Engineers' Building, Cleveland, Ohio. We are sure he will help you if he can. Try him anyway. We have sent the copies of the magazine asked for. Why not our readers write a personal letter to Mayor Seberger and tell him what a good thing brick is to have in his streets?

An Opportunity for Someone.

We have a letter from a Wisconsin reader who has an opportunity for someone. We withhold his name for obvious reasons. His letter follows:

> I own one of the best plants in the country for making clay products. It is located at Hollandale, Wis., and cost the builders more than $50,000. Some time ago I bought it at a price from the owners and I expected to make an immediate turn that would net me a handsome profit. This I failed to do. What I want to do is to interest some practical clay man. We have everything fully equipped for making hollow block, farm tile, fancy or pressed brick and we are in the center of the greatest silo country in the world. I really believe a practical man could keep the plant going on silo blocks alone. We have fifteen acres of good clay, with approximately 20 or more acres additional adjoining our plant. We have the best quarry of flint stone for crushing for road purposes. We have plenty of power to connect up with a crushing plant. We have three good engines 146-30-15 h. p. We own our own sidetrack on the I. C. R. R. We have five kilns, capacity of each, 90,000 brick, these costing $2,000 each; total, $10,000. We have a nine-track waste-heat dryer, a good building, equipped with American Clay Machinery Company machines, three large brick stacks, brick water tower and tank; 140 steel service cars—everything complete. We have a 70c per ton rate into Freeport or Rockford and there is no other plant for making tile or silo block in that whole territory in southern or western Wisconsin, and only an old-fashioned plant at Freeport, more than a mile off the railroad, which teams clay one-fourth mile.
>
> Here's my offer. We are incorporated for $75,000, or $50,000 paid up and $25,000 treasury. $16,000 present mortgage against plant, with $6,000 paid in cash now: this leaves $10,000 which can remain on plant to be paid as follows: $2,500, Nov. 1, 1914; $2,500, Nov. 1, 1915; 2,500, Nov. 1, 1916; $2,500, Nov. 1, 1917; and all at 6 per cent.
>
> To the person putting up $6,000 spot cash and either loaning new company $10,000 or furnishing a credit of that amount until such a time as some of the treasury stock can be sold—for operating capital—I will convey 300 paid up

> price at least half. I have taken samples of the clay to several local assayers and all have said that the clay was of the highest quality and that I had discovered a gold mine. I am going to make further tests, but am just waiting for the arrival of some machinery before making the tests."

Mr. Baudisch has had twenty-three years' experience in the clay business and has letters of recommendation from many of the great Eastern brick companies. He was the first man to build a drain tile plant in the Rio Grande Valley. The plant in question was built at Brownsville.

Another Has a Concrete Fight on His Hands.

Following on top of the letter from our Canadian friends we have one from Samuel Knapp, of Winona, Minn., a member of the House of Representatives, who finds a similar condition in his state, where he says "certain interests" are seeking to specify concrete in 80 miles of country highways. He says:

> In "Brick and Clay Record" of Oct. 7 you have an article on the Wayne County Roads. I am opposed to concrete roads and wish you would let me know by return mail for what I can purchase 100 to 500 copies of this article in book or pamphlet form. Trust you will reply promptly, as there are certain interests here that are seeking to build 80 miles of roads of concrete and I want that article to hand to the taxpayers of the county.

Anticipating many similar requests we have reprinted Mr. Green's report, referred to above, in a neat pamphlet and several thousand already have been sold. Nothing that has been printed in these pages has been received so warmly by brickmakers who want to combat the perfectly organized selling and promotion forces of the cement interests, as has "The Truth About Wayne County Concrete Roads." The pamphlets are sold at the rate of $25 per thousand, which barely covers the cost of printing. Representative Knapp was so informed by return mail.

Gets Use of Brick Started by Special Price.

The American Brick & Tile Co., of Waynesboro, Miss., "broke the ice" in its home county and got the first brick house erected by simply offering to supply the brick at a special price "to start the ball rolling." This letter from our Mississippi subscriber explains how it was done:

> We are located in a county in Mississippi that has not a brick dwelling in it. Two months ago a gentleman from the country came in and said he wanted to rebuild his house, which had been burned. We told him we would like to see how a brick dwelling would look in Wayne county and made him the proposition that if he would build we would take off $1 per thousand from our regular price for brick to start the ball. We have nearly finished delivering 100,000 brick at $5.50 for the purpose and have two other contracts in sight.

We congratulate our Mississippi friend on having "broken the ice" and we hope, as we believe it will be, that he will have plain sailing in the future. Why not take some of the special articles that have appeared in recent issues of "Brick and Clay Record" and use them among your prospective builders? For instance, in the June 1 issue there is a very interesting story by a writer entitled, "Why I Built a Fireproof Home." In the Oct. 21 issue there is another, "Fireproof Homes That Cost $2,200 to Build," and in the Nov. 4 issue, "Building Brick Houses for Working Men on the Installment Plan," is still another that could be used to advantage. These articles, with others that have appeared, have the cost items worked out to every stick and brick and show the plans and a photograph of a house that actually has been built. Soon, "Brick and Clay Record" expects to print an article describing a small brick house that costs $800 to build. Keep a file of your magazines and use these articles from time to time. We go to the expense and trouble of preparing them for your use.

We congratulate our Mississippi reader on his success and hope that now he has the opening wedge that he will be able to make Wayne county a home of brick.

Takes Employes Into His Confidence.

C. E. Heskett, manager of the Idaho Vitrified Brick & Tile Co., of Boise, Idaho, believes taking his employes into his confidence as a means of getting greater efficiency out of them. We agree with him. If we expect to get the best out of those we employ, "treat them like human beings." There is no surer proof of your desire to do that than to tell a man you trust him. Friend Heskett's letter follows:

> An editorial appeared in "Brick and Clay Record" Nov. 18 in answer to a subscriber who asked, "What can I do to increase the efficiency of my men?" The editorial is all right as far as it goes. My experience has shown me that it was essential to get the men interested in their work.
>
> So many superintendents are afraid of losing their job they do not want their men to learn anything about making brick. They are afraid the other fellow will learn so much he will take their place. As a result he does not explain why he does so and so, and what he wants them to do.
>
> I find by talking with my men about the work and telling them why I do this and that, I get more and better work out of them. I do not employ a superintendent or a foreman. I tell the men what I want done and they do it without having to be watched. I am using about half the men the former manager did and getting more work done.
>
> I find by taking my men into my confidence and telling them why I want certain things done, they take an interest in the work. If a man has to be watched he is not a man for a brick manufacturer.

Mr. Heskett undoubtedly is acting as not only manager and sales manager, but also as superintendent and foreman. If the conditions at his plant warrant this situation well and good. We doubt it, however. Why not take your brightest and most

Opportunity

is accredited in some quarters with but a single knock. While we intend calling as often as necessary, it might prove as advisable to answer one of the initial summons as those later on.

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We are taking the license of associating our service with the call of opportunity, not through any conceit in our ability, but solely through being witness to the economy and efficiency our years of experience in many fields have enabled us to effect for those who have honored us with their confidence.

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apt employe into a little more of your confidence and, for the sake of convenience, give him the title of superintendent or foreman? If your rule holds good always, it will in his case and you will find you will have more time to look after some other angles of the business—the selling end, for instance. Keep your eye constantly on this man and let him devote his time or a part of it keeping his eye on the other men. This will relieve you of a lot of detail. Of course, you can hold weekly conferences with your men—say a meeting that includes every employe, and thus keep up your personal influence and continue the good feeling you have inspired. We all like "to keep in touch with the boss" and it is a good idea to encourage this desire.

Most managers get the idea that they can do the most by working with the men in the plant. It is a mistaken idea. Let your superintendent superintend the plant. You superintend the superintendent and devote the rest of your time to selling all he can produce under your guidance. Selling what we can make is the secret of business success.

What we have said here is said with the kindliest of spirit. Will Brother Heskett so construe it?

A Letter from Brazil.

We have a communication from T. F. da Rosa, S. Paulo, Brazil, whose address has been 19 Avenida, Hygienopolis. A former letter enclosed the price of a year's subscription to this journal, stating that he was interested in the purchase of some American brick machinery and wanted to see the advertisements so he could write to the American manufacturers. He has been receiving the magazine regularly and evidently established the plant he had in mind and is now ready to erect a second. Here is what he says:

> I beg to say that my future address, to which your magazine must be sent, will be 57, rua Fortunato, S. Paulo, Brazil. I am very glad I took the subscription to "Brick and Clay Record," for it has been of incalculable value to me in my new plant, which has a capacity of about 20,000 tubular brick per day and about 50,000 common brick. I might add that we also make drain tile and sewer pipe and a little pottery.
>
> I will take a trip to the United States, probably by next year to visit some of your big brick yards and other manufacturers.
>
> I am sending for catalogues from the machinery manufacturers advertised in your magazine, as I may buy some more machinery for another plant I have in mind to establish.

Here Is a Bouquet.

Once in a while a sweetly scented bouquet comes our way and we believe we will be pardoned if we reached across the footlights and take it. The following little ray of encouragement comes from the Webster Brick Co., of South Webster, Ohio, and was penned by Harry M. Strong, the secretary and general manager:

> We have noted with considerable gratification the progress you have been making, and the increasing value of the articles appearing of vital interest to the brick manufacturers. We have been greatly benefited by a number of these articles and wish you continued success in the efforts you are putting forth.

Sometimes, in our efforts to make "Brick and Clay Record" of real, practical value to our readers we get somewhat discouraged. There is so much to be done—the task is herculean, the responsibility great, and we almost despair. Then comes along a letter like the above and we attack the job before us with renewed hope.

Is it not wonderful what good a few commendatory words do a fellow? Editors are human, despite the popular opinion to the contrary, and well-placed praise keeps up the fighting spirit even in him.

It is only by the receipt of letters from our readers we editors can ascertain whether our work is meeting with their approval or disapproval. Write in often, friends, and do not get the idea into your head that we want you to praise us every time. We would rather have a frank criticism than anything we know of, although, of course, a few words telling us that we are on the right track (if we are) will do us just as much good.

Comment on the paper. Discuss the articles therein. If you have a different opinion as to how a thing should be done, tell us about it. "Brick and Clay Record" is your paper and if we do not run it to suit you tell us so and we will see that your wishes are gratified. You are a stockholder and we want to pay you semi-monthly dividends by giving you something of value in each issue.

Bulging Block Keep Repair Men Busy.

This letter is from the Sheridan Press Brick & Tile Co., Sheridan, Wyo., and emphasizes the statement recently made in this magazine that creosoted wooden block are failures as paving material:

> Enclosed find 30 cents for which please send us copies of the Nov. 4 issue. One of these is for the superintendent of the Sheridan Railway Company of this city, who has had no end of grief due to the bulging of the creosoted blocks. The block people blamed the bulging to the lack of a flange on the rails in the paved district. The illustrations in your article on the creosoted block in Chicago shows the bulging just the same on the rails which have flanges.
>
> Every few days a piece of street bulges, but the block people get their men busy at once repairing it.

Flange or no flange the wooden block will bulge. This is because wood will not stand the constant wetting and drying the block are forced to undergo in the street. When the block were in the tree and "full of life," the minute cells were loaded with sap. As the tree was felled and hewn or sawed into block and these block "cured" or "seasoned," the sap disappeared and the cells or pores were left empty. The block manufacturers are working on the assumption that if these pores are refilled with a preservative they will resist weather influences and wear longer.

If it were possible to keep this preservative in the pores of the block the aim of the manufacturer would be achieved. But, as the preservative is an oil, and, as oil and water refuse to mix, trouble results.

With the tar-filled block in the street the first good rain or the first sprinkling cart that comes along and pours forth a deluge of water over the surface, the oil, being lighter than water, rises from the tiny cells or pores and the water replaces it. The oil floats on the water-covered surface and is swept away by traffic or the street sweeper.

Of course, this does not all occur at the first wetting. It may be weeks or even months before all the oil leaves the block, the period of time depending upon the quantity of water and the frequency of the soaking.

With the oil out of the pores, the wooden block no longer are protected by a preservative.

Water-soaked—every cell in the block filled to the limit, the block swell and a bulge occurs—slight at first, probably.

Then comes the sun and the water is evaporated, leaving the cells dry and thirsty. There is a shrinkage. Another soaking from the sprinkler or a shower, and the gaping cells soak up their fill and another swelling takes place.

And thus it goes, first shrinkage and then expansion, and over and over the process is repeated.

When the block are dry they splinter readily and when they are over-soaked with water they buckle in the pavement and the loosened spot, unless repaired or replaced immediately, breaks up when the moisture is gone.

Is it any wonder the so-called creosoted block fail?

Kiln Gas and Smoke Cause Law Suit.

John Sehy, manufacturer of building brick and drain tile at Ashland, Ill., has a law suit on his hands brought by a neighbor who complains of the smoke, soot, gas and vapors coming from his kiln. Mr. Sehy has been put to considerable expense and trouble by the litigation and asks us our "honest opinion in the case."

> I have a law suit on hand in which my next door neighbor has entered suit against me for an injunction on the grounds that the smoke, soot, gas and vapors make his home uncomfortable and destroys vegetation.
>
> He lives about 300 feet from my plant and bought the farm about 11 years ago. I have been in the brick business about 22 years on this same site. I am using the Swift down-draft kilns.
>
> The case was tried before a circuit judge on a demurrer and dismissed for want of equity, but was appealed to the Appellate court on the grounds that the circuit judge erred. The Appellate court reversed the decision and remanded the case to the lower court on the grounds that the judge erred for allowing the case to be tried on a mere demurrer and that the complaint was not sworn to.
>
> The case will come up before a master in chancery at the January term.
>
> My plant is located outside the city limits. In your own mind what would be your honest opinion in this case. If you can make any suggestions I would appreciate it very much.

Settling matters of law are beyond us. We have enough responsibility in striving to settle problems of clay manufacture for our readers. We are sorry we cannot advise you, other than to employ the best legal talent you can and trust in his advice.

If it will be of any similar assistance to you we might refer you to a similar case that occurred in Chicago recently. The Bach Brick Company has a plant located within the city limits. Originally there was a barren waste of prairie land around it, but Chicago grew wonderfully rapid and now the Bach plant lies in the middle of one of the best residence districts in the city.

As the neighborhood was developed as a residence section complaints became frequent of the soot, the smoke, the gases and the vapors. Residents made the same complaint that Friend Sehy's neighbor made. The gases and smoke were "uncomfortable and they ruined vegetation."

These complaints became so numerous and vigorous that a law suit was started. It was fought by the Bach Brick Co., but after considerable expensive litigation, the brickmakers lost and were forced to either move their plant or stop the nuisance.

To move the plant meant a great loss of time and money and, as one said, ruin. "Necessity is the mother of invention," so it is said, and one of the Bachs put on his thinking cap and worked out a device that solved the entire problem. This device is a system of collecting these gases and reburning them, using the heat derived therefrom in the kiln and drier.

The plan has worked admirably. The nuisance was abated and everyone is happy.

While mindful of the fact that we are not lawyers and should steer shy of questions that ought to be left to those who are, we cannot refrain from saying that in view of the experience of the Bach Brick Company, we should hesitate spending any more money in fighting what proved a hopeless case with the Chicago concern.

We refer you to the July 15 issue of this magazine, which contains a description of the Bach system under the title, "How One Plant Solved the Fuel Problem." By reading this article you will see that the Bach company not only solved the smoke and gas nuisance to the satisfaction of the complaining neighbors, but also solved their fuel problem, because they reduced it considerably. The Bach company is ahead of the deal after all.

We wonder if you would not find a similar treatment to be cheaper and better after all, than fighting the matter through the courts?

THE SCHAFFER SEMI-CONTINUOUS KILN SYSTEM

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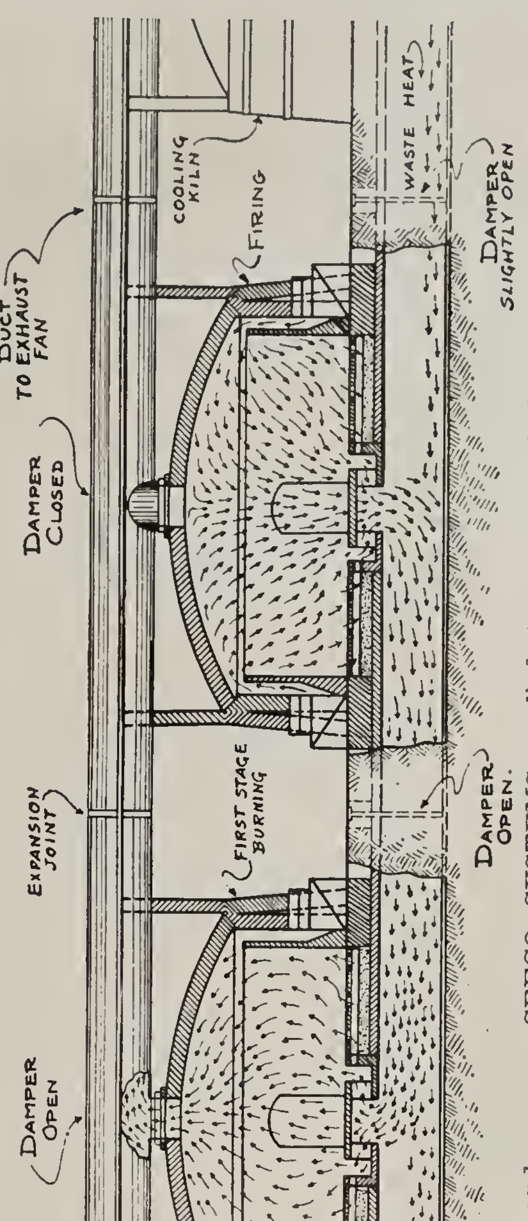

The Schaffer Semi-Continuous Kiln System consists of an overhead duct and an underground tunnel arranged in such a manner as to make the operation of the round down draft kilns continuous.

It gives the same fuel saving as the regular continuous kiln, but is much more simple to operate.

It produces a much higher class ware than is produced in either the continuous or periodic kilns.

SEECO SYSTEMS applied to your round down draft kilns will save you $1,000 per year on each kiln by taking your heated gases to the next kiln ahead, instead of out to the stack.

This is only one point of advantage.

There are many others, if you will ask us to explain.

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Chicago Brick Machy. Co.
Excelsior Tool & Machine Co.
Raymond Co., C. W.

Brick Machines (Soft Mud.)

American Clay Machy. Co.
Eastern Machy. Co.
Manufacturers Equipment Co.
Martin Bk. Mc. Mfg. Co., H.
Potts & Co., C. & A.
Raymond Co., C. W.

Brick Machines (Stiff Mud.)

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Gerlock, H. W.
Martin Brick Mach. Mfg. Co.
Ohio Ceramic Engineering Co.
Orenstein-Arthur Koppel Co.
Raymond Co., C. W.
Weller Mfg. Co.

Cars (Clay).

American Clay Machy. Co.
Atlas Car & Mfg. Co.
Berg Machy. Mfg. Co., Ltd.
Brewer & Co., H.
Chambers Bros. Co.
Chase Fdry. & Mfg. Co.
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Fate Co., J. D.
Gerlock, H. W.

The Rodgers Unit-Control Dryer

(Patent applied for)

Special Announcement of the latest type of Rodgers dryer

An entirely new application of principle in Waste Heat Dryer Construction.

Pronounced by Clay Manufacturers and Engineers, who have seen it in operation, as the most successful dryer designed for the drying of Clay Products in the past 20 years, and the dryer that will be universally used in the future.

Each tunnel, or compartment, is operated as a UNIT, and the tempering, drying and cooling is done without moving the product.

Each compartment is absolutely under control, at all times, as to temperature, volume and velocity of air and can be instantly changed to suit conditions.

The operating device is one of the most unique and simplest ever put in a dryer.

Temperature, volume and velocity of air is controlled from a central station.

An Absolutely Successful Tender Clay Dryer

Fire proofing, Tile, Brick, etc., can be dried without checking.

Every cubic foot of air carries out its quota of moisture.

It is the only dryer so designed as to permit the making of practical and scientific tests of the product.

NOTE:

Although several of these dryers have been sold, no catalogue has been issued. Mr. Rodgers will call personally and explain fully the merits of the Dryer to those interested.

L. E. RODGERS ENGINEERING CO.
Waste Heat Dryer Specialists
Brick Works Engineers
Largest Manufacturers of Brick Drying Equipment in the United States
30 North La Salle Street .:. .:. CHICAGO

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WHO'S WHO IN THE CLAY WORKING FIELD?
Read the Answer in the Names Above

WELLER-MADE

Greeting

Yuletide and the New Year are at hand, a time when the heart and mind are filled with gratitude—we can not but reflect *ours* to the many friends and patrons of Weller-Made Machinery.

The users of Weller-Made Machinery appreciate its distinct merit—we appreciate this acknowledgement and their patronage.

The name "Weller" on machinery has become so imbedded in the minds of its users that it invariably associates with it the thought and fact of *service*.

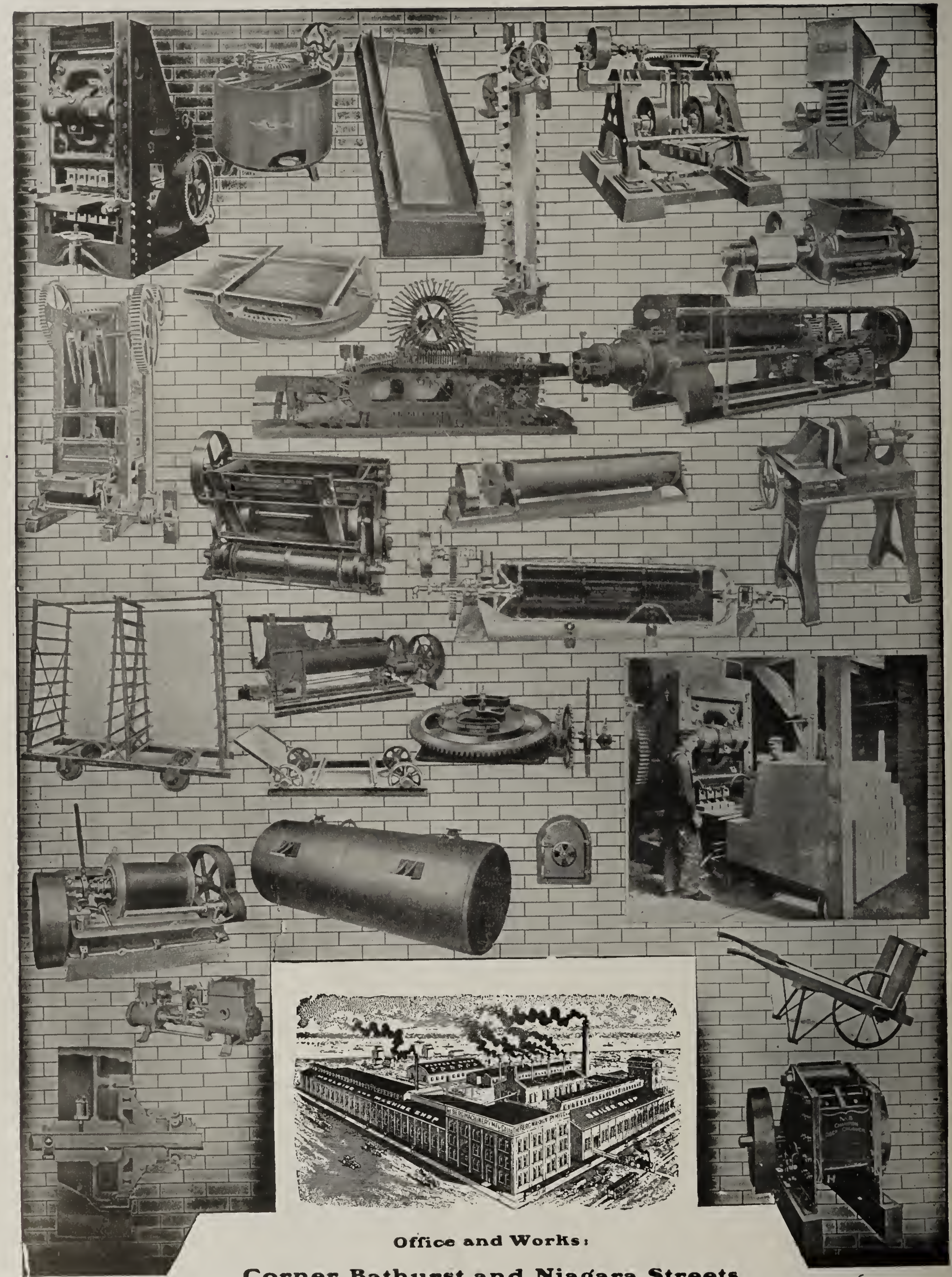
Concluding, we wish to emphasize the fact that Weller-Made Machinery will always continue to embody those elements of quality, and service which have so marked its individuality in the past.

Hoping that our wishes for a prosperous and happy New Year will be as welcome as our products, we are

Very truly yours,

Weller-Manufacturing Co., Chicago

New York Office, 50 Church Street



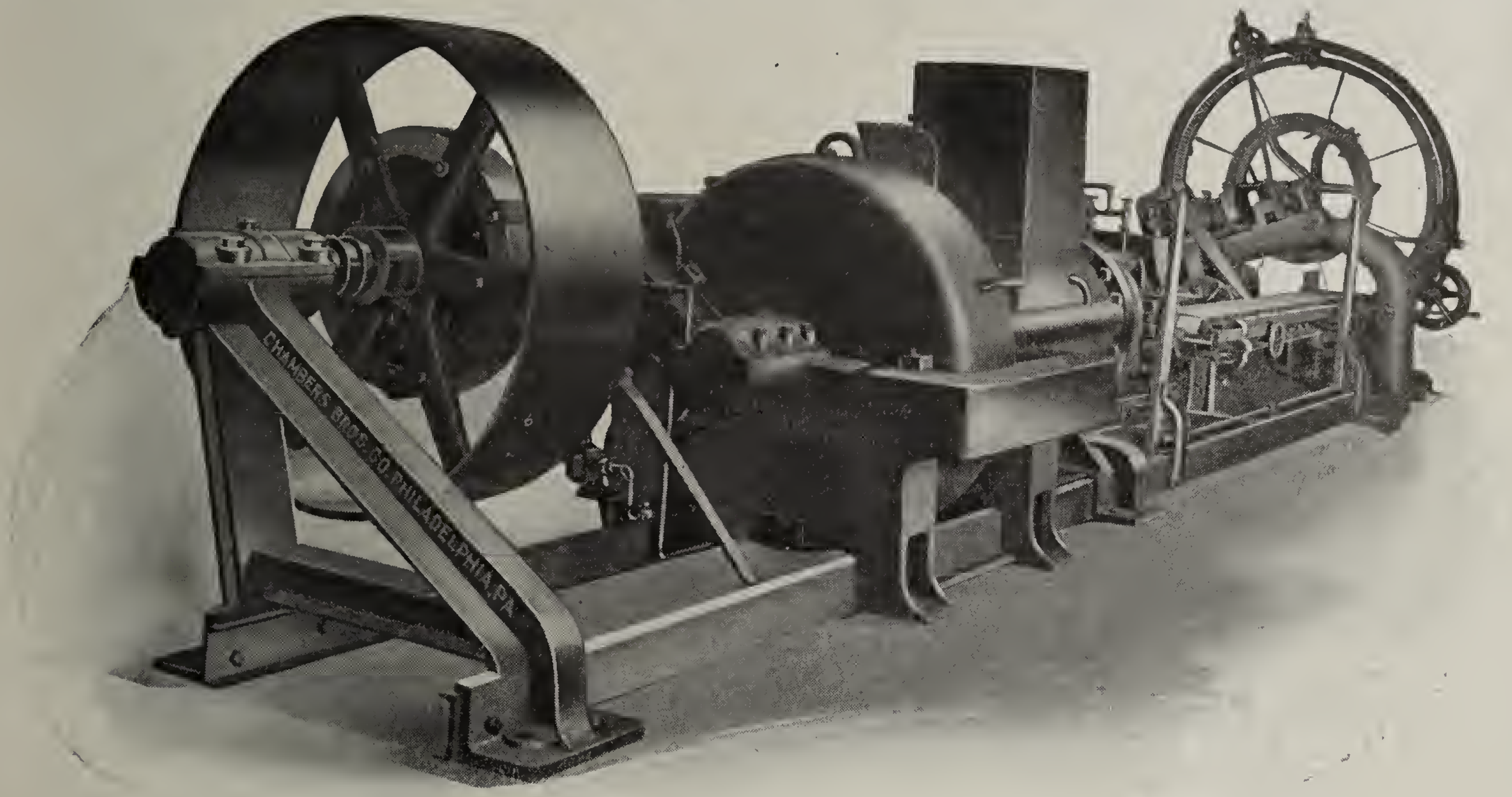
Office and Works:

Corner Bathurst and Niagara Streets

The Berg Machinery Manufacturing Co., Limited

Toronto - Ontario

Keystone Auger Brick Machine No. 1



With No. 5 Rotary Side Cutter

Combined weight about 32,000 pounds

The same machine is in use with our Automatic End-Cutters, and is designed for manufacturing from prepared clay or shale.

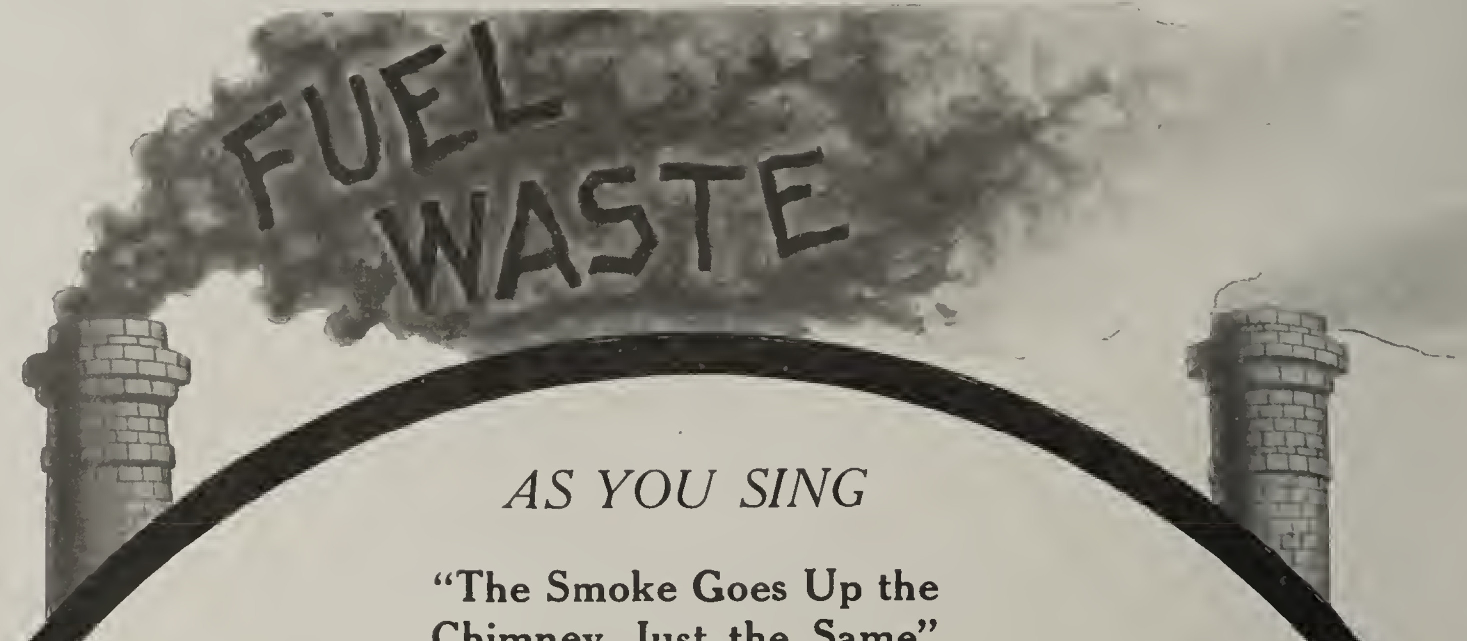
The Driving or Transmission Mechanism with its **Frame** are of great strength and have been severely tested. Gears and journals lubricated and protected in a thorough manner.
Cut Driving Gears of strong pitch and ample face and immersed in an oil bath. Every tooth constantly oiled. The Die Holder, Auger Shaft, End Thrust, Journal Bearings, Gear Frame and Friction Clutch are all interesting features.

We also build five sizes of **The Chambers Standard Pattern Auger Machine** having shaft, with inserted knives adjustably secured.

Chambers Brothers Company

PHILADELPHIA, PA.
52nd & Media Sts.

CHICAGO, ILL.
549 W. Washington Blvd.



AS YOU SING

"The Smoke Goes Up the Chimney Just the Same"

REMEMBER

THAT PROFITS ARE MINGLED WITH THE SMOKE CLOUD AND ARE GOING UP BY THE SAME SOOT-LADEN ROUTE

INSTALL

THE UNDERWOOD SYSTEM OF BURNING PRODUCER GAS

APPLYING IT TO YOUR PRESENT KILN EQUIPMENT WITHOUT ANY GREAT EXPENSE

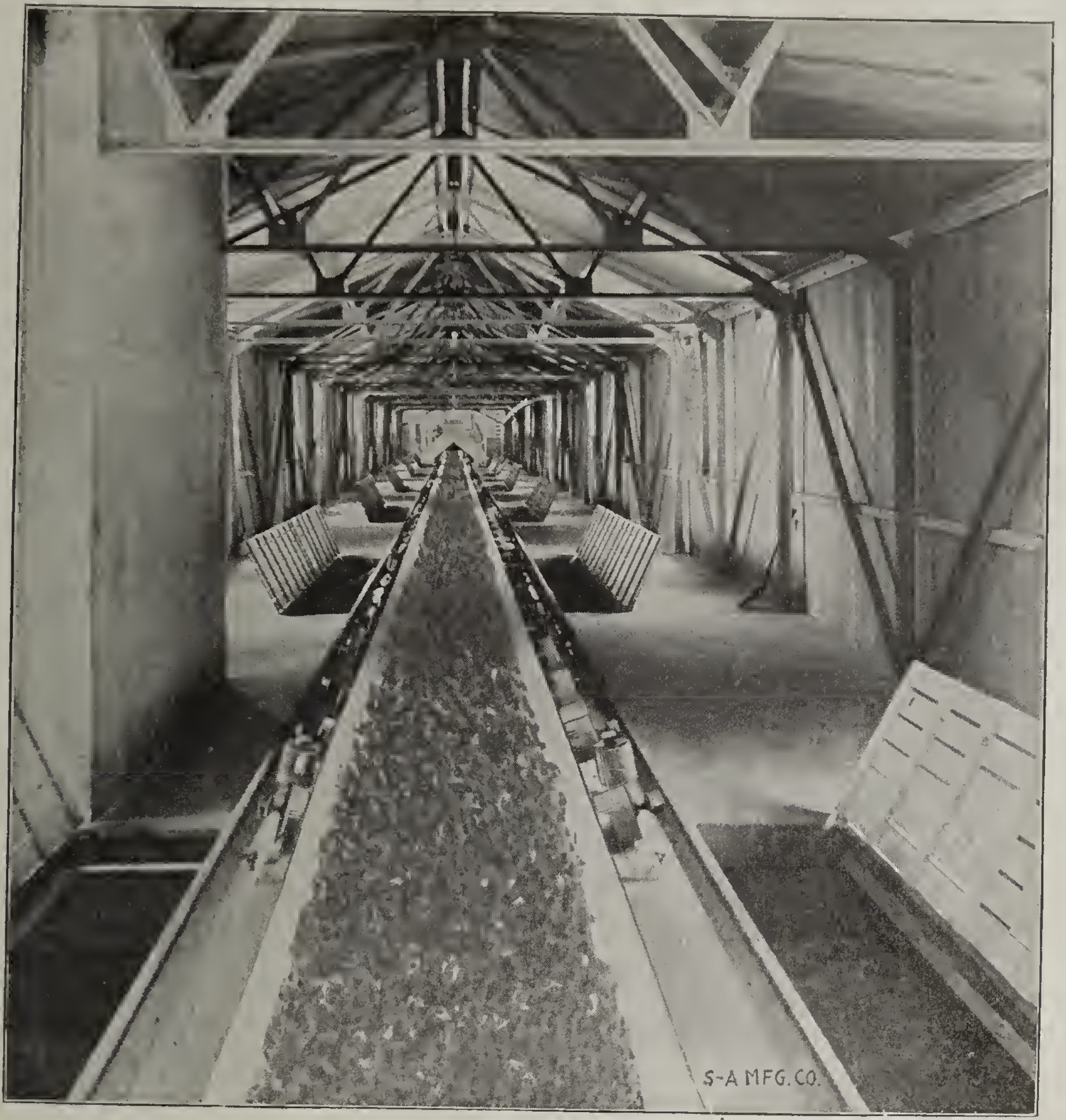
Wastea Fuel Means Wasted Labor and the Two, in Combination, Eat Into Profits and Make Dividends Small

WRITE FOR FULL INFORMATION

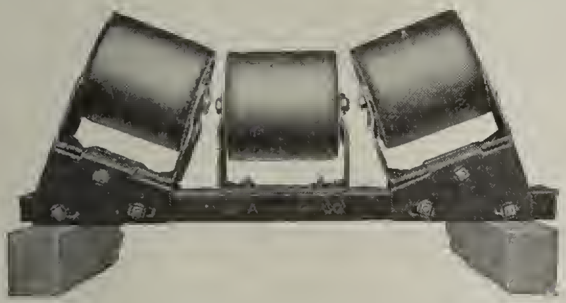
ADDRESS ALL COMMUNICATIONS TO

MANUFACTURERS EQUIPMENT CO.

DAYTON, OHIO, U. S. A.



Here's Economy In Handling Clay



The "S-A" Unit (Ball Bearing) Carrier—

The only practical ball bearing carrier on the market—just another one of our cost reducers.

It Keeps You Posted

on the way your contemporaries are meeting these same problems.

Write for **Labor Saver** No. 62 describing the plant of the Clay Products Co.

This represents the simplest way to cut your cost of production. A conveying system for handling your clay will save in these ways:

1. Reduce your labor cost.
2. Eliminate the unskilled laborers, who require the most supervision.
3. Increase the capacity of your plant.

Think these things over. Then talk them over with our engineers. Our engineering board is at your service.

Let our engineers help you meet your conveying problems.

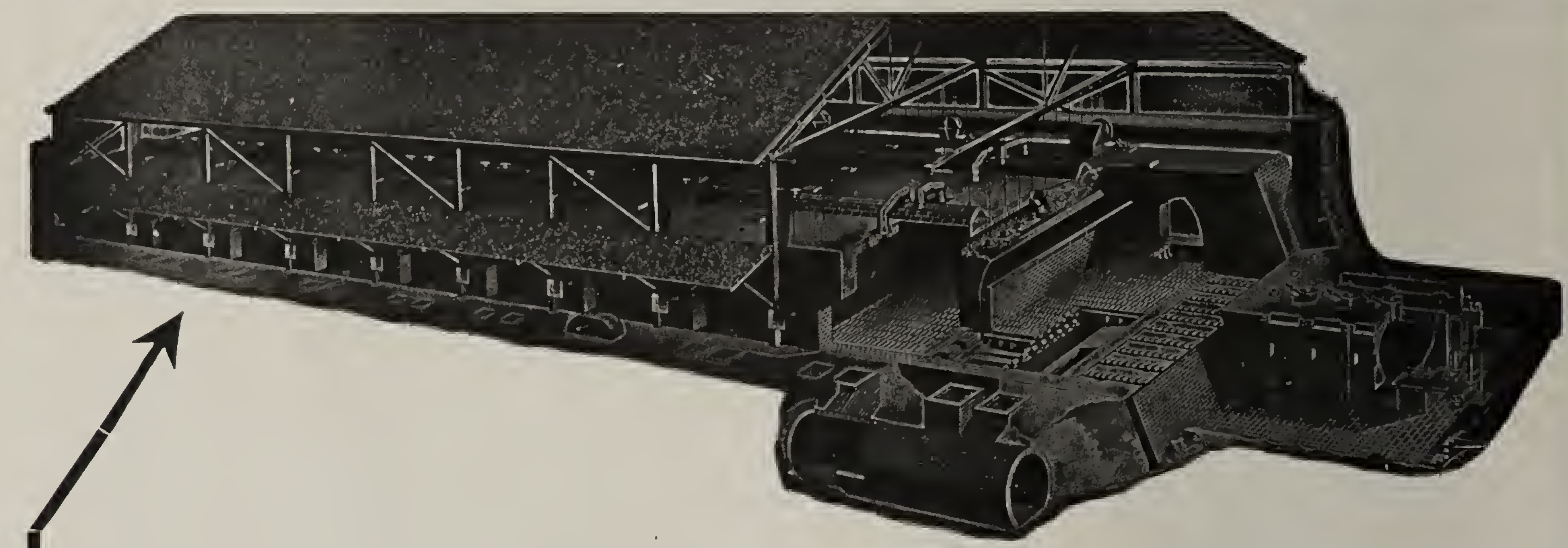
Stephens-Adamson Mfg. Co.
CONVEYING ENGINEERS
Aurora, Illinois

New York
St. Louis
Boston
Louisville
Chicago
San Francisco
Salt Lake City
Johannesburg
Pittsburgh
Los Angeles
Vancouver
Sydney

Solve Your High Fuel Cost

With the Raymond Patented Producer

Gas-Fired Continuous Kiln



SUPPOSE a coal dealer should walk into your office and remark: "Mr. Clay-worker, I am going to sell you coal for less than half what you are paying now." What would happen? You would in all probability jump over the top of your desk, hug that coal man for joy, sign the contract without hesitation and then take your benefactor out to a feast, stuffing big fat cigars down his throat between acts.

"Idle dream," you say, because you know the coal man isn't up to any such tricks. More than likely, he will raise the price.

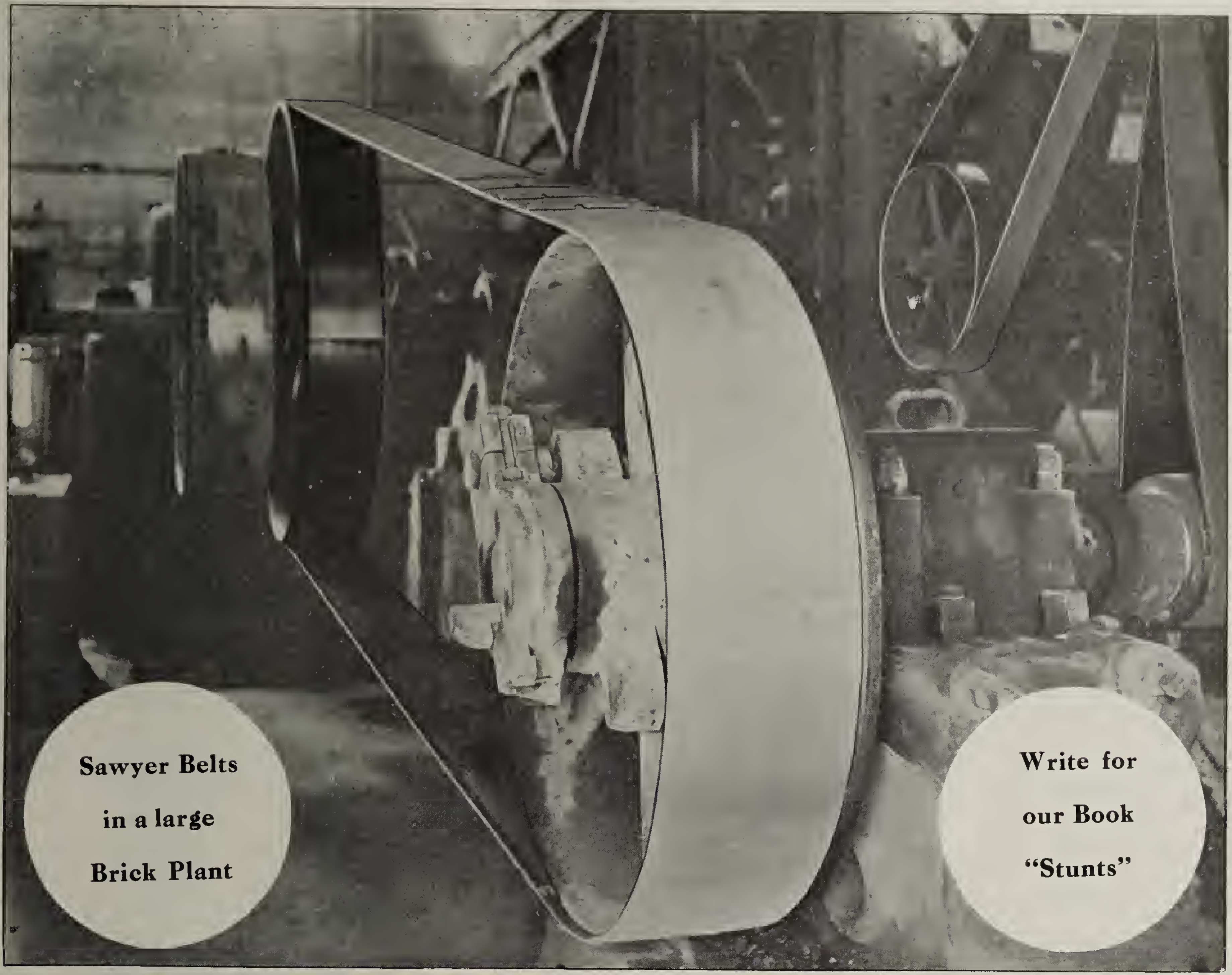
That's true, but the coal man's action does not necessarily make fuel reduction an "idle dream." Letters from numerous users of the Raymond Patented Producer Gas Fired Continuous Kiln prove the claim that more than half the fuel now used in the burning of clay wares can be saved through the adoption of this high type kiln. Yet, many firms remain skeptical and are slow to discard the old, wasteful kilns for the new, although the latter may mean thousands of dollars more in dividends each year.

Get your "thinker" working and reason this matter out in a business-like way. Doesn't the saving of over 50% of your fuel mean anything to you? Read the testimonials, then write us, asking any questions that may arise regarding this kiln. A detailed description will be mailed you.

The C. W. Raymond Company

The Largest Exclusive Builders of Clay Working Machinery in the World

Dayton, Ohio, U. S. A.



Where Sawyer Belts Have Been Used Before

In a list of rules for ordering Belting is this rule: **"Find out where a belt has been used before and what satisfaction it gave."** We are showing each month, pictures of hard places where Sawyer Canvas belt is being used, and will give the names of firms in whose plants the photographs were taken on application. The men who buy the belts in large brick plants are shrewd buyers, and there must be a reason for specifying any brand. The reason for SAWYER being used is QUALITY IN THE BELT WITH SATISFACTION GUARANTEED.

Write for further information.

SAWYER BELTING CO., Cleveland, Ohio

Boost Your Kiln Profits

AT EVERY BURN—While Increasing Your Monthly Output

Note These
SAVINGS
In
TIME
FUEL
LABOR
Through The

Tecktonius-Vogt Kiln-Construction

The unique Up-and-Down Draft feature of the Tecktonius-Vogt Kilns results in a **surprisingly high percentage** of No. 1 Ware, per burn. In fact, in the Tecktonius-Vogt there is practically **no spoiled ware**, because the new improved method employed **heats the bottom first—dries it**—and enables it better to preserve its original shape, and sustain the weight of the upper courses. "Whitewash" and "efflorescence" are thereby prevented; the "bond" is not injured by "boiling;" and **better, stronger ware is assured.** Even the small percentage of imperfect ware taken from a **Tecktonius-Vogt Kiln** is salable at some price—**there is very little dead loss.**

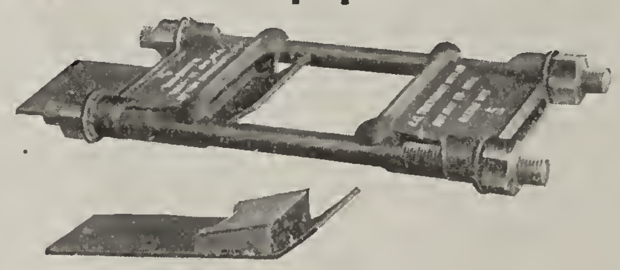
The Tecktonius-Vogt is a **fast** kiln. You can burn it twice a month. That makes a **big difference** to YOU. The water-tight, non-radiating construction **economizes in fuel.** Your fires don't have to dry up moisture from without. Their heat is retained in the kiln by the "blind bottom" and the **special coated crown. One man** regulates your **Tecktonius-Vogt Kiln** with **one damper** at the stack. Other kilns require the **constant attention** of two or more attendants.

Mr. Anton Vogt, who is a Kiln Construction Engineer of over 35 years' experience, recommends a Round Kiln as the most efficient type. Write us as to his routing and terms.

Tecktonius Complete Iron Accessories

The Tecktonius Draw-Band Lug is made of **malleable iron,** without rivets or holes. The harder the **pull—the harder it grips. The Tecktonius Lug** is simple—you can fasten or adjust it yourself—**easily —quickly—satisfactorily. It is a money-saver—to buy and to use. Tecktonius Draw-Band Lugs** that don't stand the test, go to the scrap-heap. This costs US money, but **protects** YOU—for every lug **you get is perfect.**

"Make Old Equipments New"



Write for descriptive booklet—sent postpaid, on request.

Other Tecktonius Kiln Hardware —This house is stocked with a **complete line of iron accessories, ready for immediate use, and long, satisfactory service.** Our complete line embraces lugs, bands, R. R. Rails for door frames, stack lugs, stack rods, ventilators, span rods, crown covers, grate frames, bolts, manhole plates, dampers, wire rope, pulleys, braces, and washers. **Every piece is properly fabricated.** It will pay you to correspond with us. Orders shipped direct to you when desired. Chicago freight rates.

E. C. Tecktonius Mfg. Co., Racine Junction, Wis.

Checking Up Losses

I appeal to your sense of fairness and believe that you admit that if you could save the losses, you can see each day on your own plant, that it would greatly increase profits.

Listen to this

Can you afford to permit such losses, and can you afford to continue trying to make yourself believe that no one can check them up, readjust your plant and convert the losses into profit?

In checking up a small plant and making a few inexpensive changes, the losses were converted into a profit of over $100 per day, while your plant may show a **greater** saving.

I am Working to your Interest

Mr. Clay Product Manufacturer, I make your business a study. My men have had years of experience in technical training and become practical clayworkers by working in actual production for a number of years, and are well qualified to get out on your plant, point out your defects and apply a simple and efficient remedy.

Your Greatest Loss is in Fuel

Did it ever occur to you that you are actually losing 70 to 80 per cent of the heating value of your coal if you are using it direct fired in Periodic Kilns? This loss can be converted into profit by well-known established methods.

Every manufacturer knows that burning with gas is an ideal method. But you do not know it can be applied to all kinds of kilns.

Gas Plants Designed

I design gas plants to meet your requirements, and to produce the most economical results, and can furnish you Producer and Combination Gas plants, generating gas with a heating value of from 124 to 1,000 B. T. U. per cubic ft. that can be applied to any kind of Kiln, Boiler or Gas Engine.

W. C. KIRKPATRICK

EFFICIENCY EXPERT TO THE CLAYWORKER

316 Chamber of Commerce CHICAGO, ILL.

PHONE FRANKLIN 3086

Mention "BRICK AND CLAY RECORD" when writing to advertisers.

"Don't Pay $30,000—Pay $3,000"

A Klose Kiln, costing $3,000 to build, is equal in capacity to a kiln of the regular continuous type costing $30,000.

This statement is made without reservation and, in itself, should invite investigation. We are prepared to give proof.

The Klose Kiln is Built Without Expensive Arches and Doors

Modern inventive genius has given us wonderful labor and time-saving apparatus. In the world of clay-working, the Klose Kiln stands pre-eminent.

Stop Wondering—Investigate!

Get the Truth About Klose Kilns

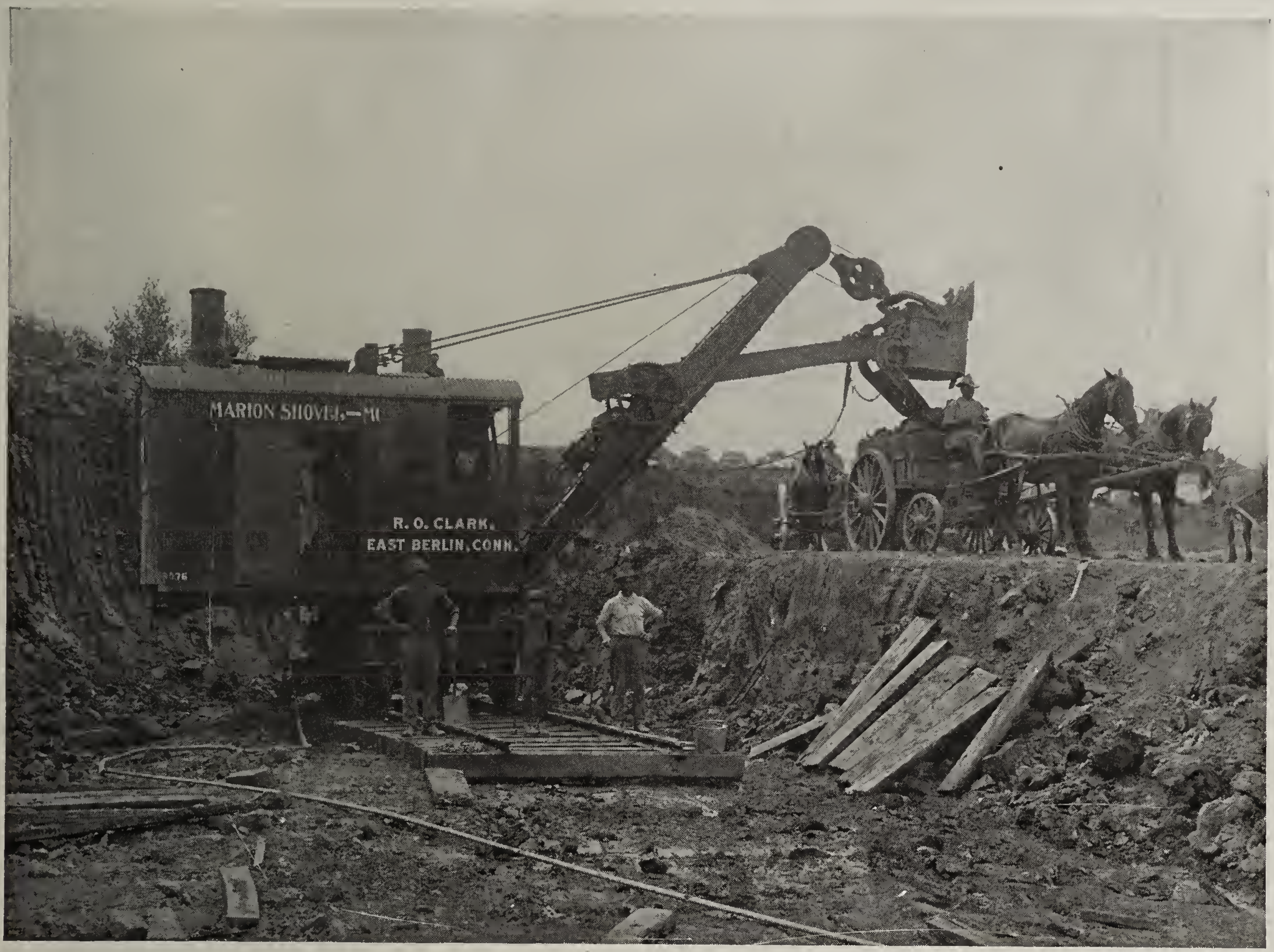
Better know facts than wander open-eyed and open-mouthed in a maze of uncertainties. Knowledge is easily obtained.

Klose Kilns Burn Less Fuel Klose Kilns Burn Better Ware

Three hundred pounds of finely screened coal will burn 1,000 brick or its equivalent in other clay ware. The burn is uniform—every piece of ware receiving an equal distribution of heat—no waste in fuel or ware.

We want to send you a pamphlet on the Klose Kiln. With it we will submit proof of every claim we have made. Is that worth while?

Denison Ceramic Engineering Co.
Hippodrome Bldg., Cleveland, O.



Marion 1-Yard Revolving Shovel Digging Clay for R. O. Clark, East Berlin, Conn.

Marion Revolving Shovels

have solved the labor problem for a great many Brick Manufacturers throughout the United States and Foreign Countries.

They not only handle the material at the lowest possible cost, but they mix it thoroughly at each dipper load, a feature worth considering.

Write for catalog.

The Marion Steam Shovel Company

STATION A—MARION, OHIO, U. S. A.

New York—50 Church Street; Atlanta—Candler Bldg.
Chicago—Monadnock Block

"OPEN LETTER"

Illinois Clay Workers Annual Convention

At Champaign, Illinois

Beardsley Hotel - Headquarters

January 22-23-24, 1914

We want co-operation and representation from every Clayworker-Dealer and Shipper into this State—

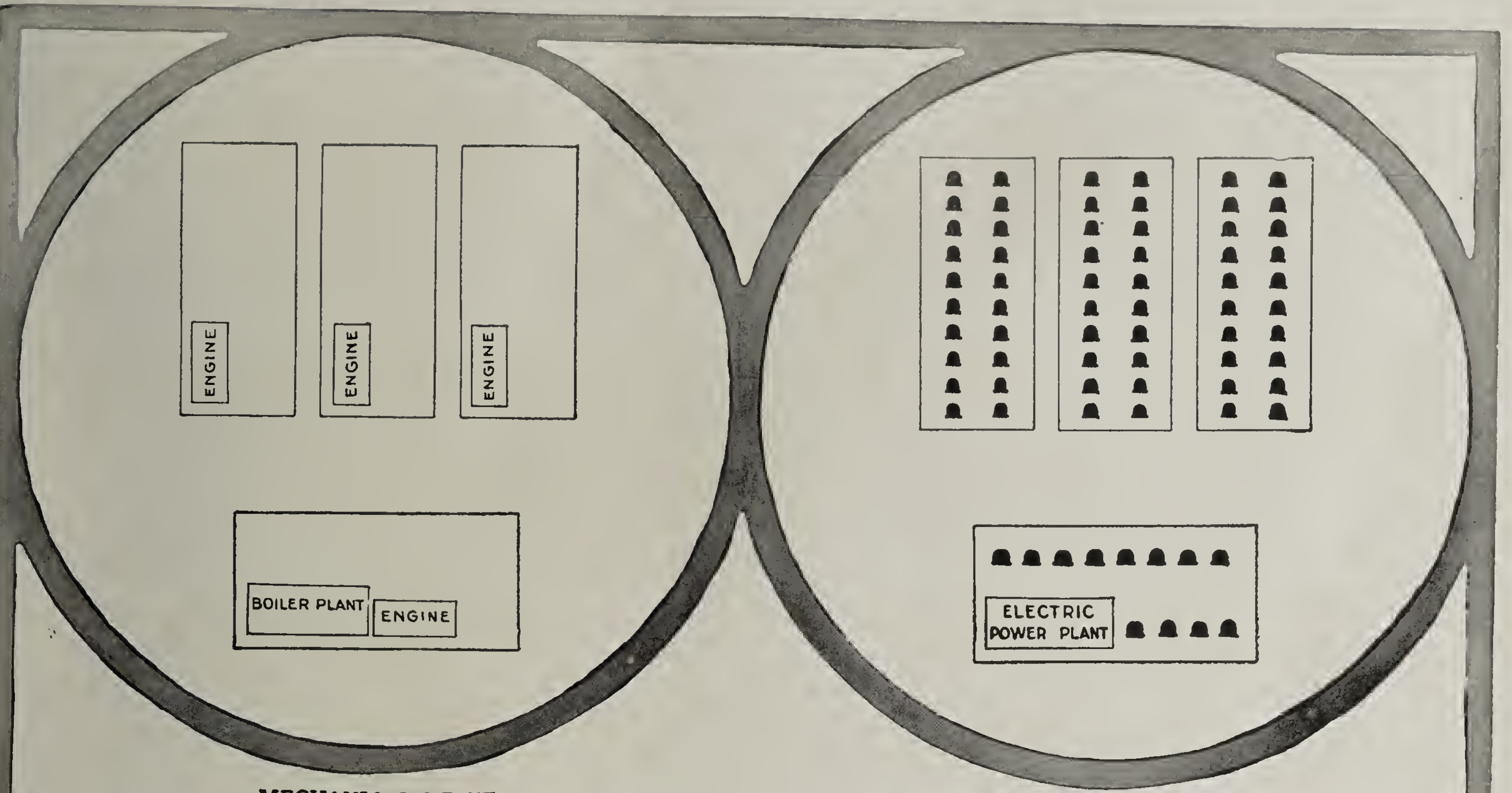
Bring data on power consumption-cost data, burning, machinery, drying and selling troubles, as there will be practical discussions on all of these subjects.

Make out your question box slips—early—so we can bring them up with papers to which they apply.

Do not forget the short industrial ceramic course under the auspices of the Ceramic Department, University of Illinois, immediately preceding the convention. Short course begins January 12th and continues for two weeks. The kiln house is now completed and equipped. During the convention there will be an exhibit of the test kilns under fire and the clay working machinery in operation. The equipment includes a complete brick machinery outfit for an output of 10,000 brick per day.

Watch this Space—

A. E. HUCKINS, Secretary
Urbana, Illinois



MECHANICAL DRIVE

ELECTRIC DRIVE

Combine all your Power Plants into One and Reduce Power Cost

Combining several small relatively inefficient steam power plants into one large highly efficient electric power plant has cheapened the cost of power by:

Using large efficient generators.
Running generators more fully loaded.
Reducing number of spare units required to assure continuous operation.
Saving power loss through steam condensation in long pipes to isolated engines.
Reducing number of spare parts required.
Cutting down operating and supervisory forces.

Where central station power cannot be purchased, every one of the above advantages can best be realized by individual motor drive from Curtis Steam Turbines.

These turbines are the most efficient power producers known where coal is used for fuel and low maintenance over extended periods is the consideration. They maintain this efficiency over a wide range of loading so that even if generators are not operating at full capacity, power is generated efficiently.

Many power plants are operating today without provision for spare power units as year long non-stop runs are not unusual for Curtis Steam Turbines.

Electric transmission of power to G-E motors located on each machine admittedly does away with the large power loss due to steam condensation in pipes to isolated shop engines and with the power loss due to friction in lineshafting. These savings result in cheaper power.

Let our engineers centralize your plant without placing you under obligations.

General Electric Company

Largest Electrical Manufacturer in the World
General Office: Schenectady, N. Y.
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Springfield, Mass.
Syracuse, N. Y.
Toledo, Ohio
Washington, D. C.
Youngstown, Ohio

For Texas, Oklahoma and Arizona business refer to Southwest General Electric Company, (formerly Hobson Electric Co.), Dallas, El Paso, Houston, and Oklahoma City. For Canadian business refer to Canadian General Electric Company, Ltd., Toronto, Ont. 4379

WIRE-ROPE

AND

AERIAL WIRE-ROPE

TRAMWAYS

View shows a B. & B. Pat. Automatic Aerial Wire-Rope Tramway which transports 800 tons daily a distance of 1300 feet at a cost of less than 1c. per ton. This tramway is equipped with G. & S. Pat. Automatic Self-Dumping, Self-Righting and Self-Lock Buckets.

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BRODERICK & BASCOM ROPE CO.
St. Louis, Mo.
BRANCHES: 76 Warren St., N. Y. Seattle, Wash.

Baird

AUTOMATIC POTTERY MOLDING MACHINES

1,000 PIECES PER HOUR GUARANTEED ON MEDIUM SIZES

BAIRD MACHINE & MFG. CO.
DETROIT, MICH.

BRICK and CLAY RECORD

Brick Established 1894

Clay Record Established 1891

A SEMI-MONTHLY RECORD OF THE WORLD'S PROGRESS IN CLAYWORKING
PUBLISHED ON THE FIRST AND THIRD TUESDAYS IN EACH MONTH
by KENFIELD-LEACH COMPANY, 445 Plymouth Court, Chicago

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HOW COX GOT INTO THE GAME—By Iverson C. Wells 1252

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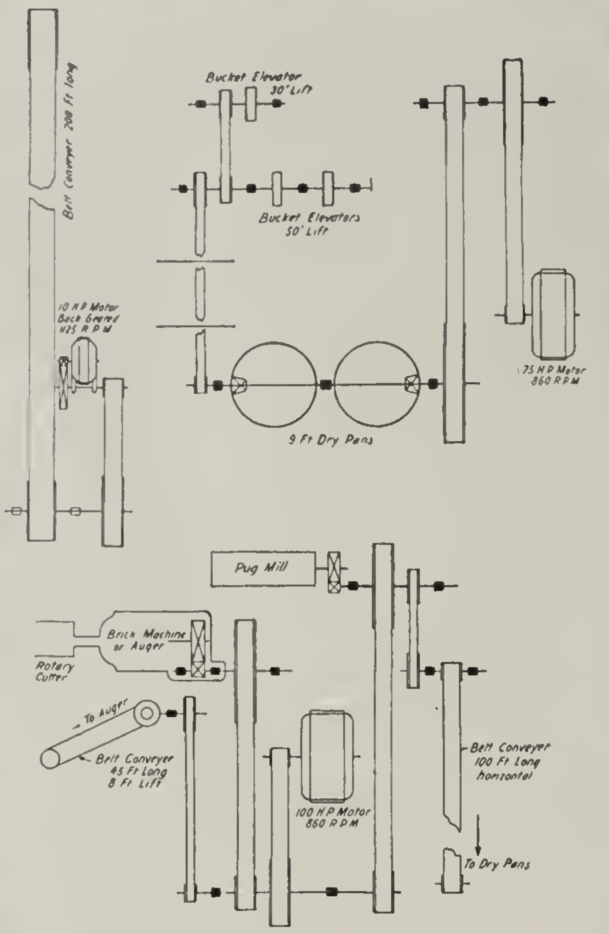
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Fig. 1.

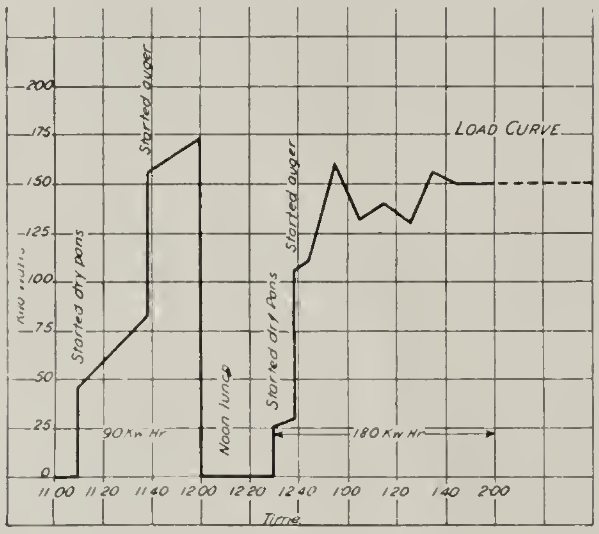

Fig. 2.

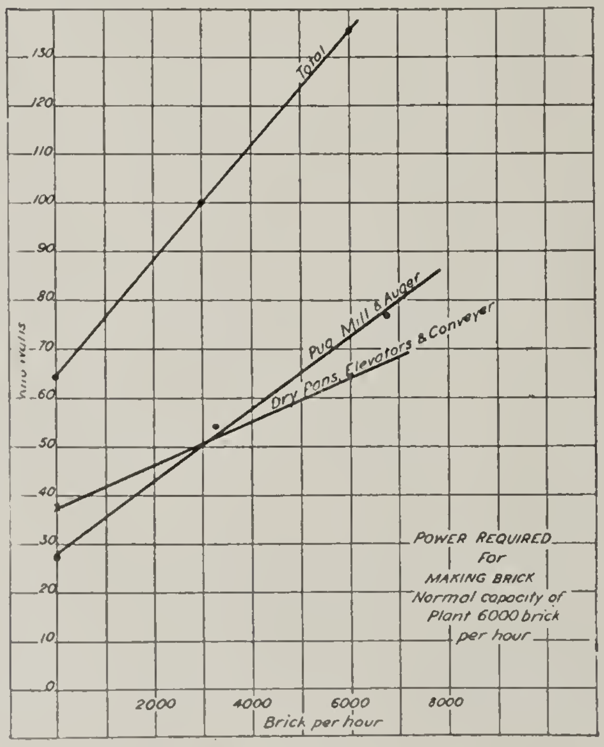

Fig. 3.

Westinghouse Motor Driving Auger Machine

Why Westinghouse Individual Motor Drive Is the Most Economical For Your Plant

Figure 1 shows the machinery layout of a building-brick plant, which has been changed from steam to electric drive. The motors were substituted directly for the engines, the old shafting and belts being retained.

Figure 2, the load curve, emphasizes the advantages obtained by the fact that the motors can be easily started or shut down, and that when shut down they involve no power expense whatever.

Figure 3 gives the power required for producing brick and **shows the losses which might have been avoided** if individual drive, i. e., a separate motor for each machine, had been used. The friction loss with no material going through the plant is 62 kilowatts, a considerable portion of this being due to line shafting, belts, and extra bearings. Were individual motor drive used about three-fourths of this continuous and unnecessary loss would have been avoided.

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1914

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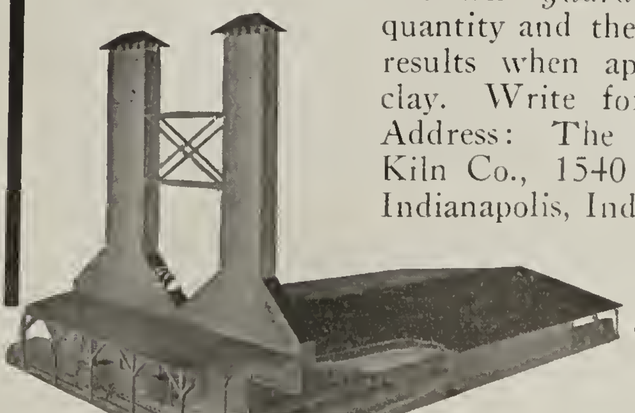


Boost For Clay Products

IF you really desire to see the clay product industry as a WHOLE take its position at the head of all competing materials you must BOOST.

The boost must begin at home, of course, like all well-organized charity, but every time you have a minute to spare you must put in a GOOD word for the clayworker in OTHER lines. Good deeds, like bread cast on the waters, come back to you threefold.

Practice Practical Co-Operation

IN other words form the unselfish habit of stepping out of your way once in awhile to say a favorable word for everything that is made of burned clay.

Whenever burned clay gets a hold—no matter if it is or is not YOUR product, you receive a DIRECT benefit, for the buying public soon learns that if it is a material worth while using in one way it is worth while using in others.

In the Following Pages There's a Chance for You to Begin Your Work

LOOK through the advertising columns devoted to the manufacturers of burned clay products. Get acquainted with your brother clayworkers—some day you may get the opportunity to say a good word for them.

Suppose in your home town or county there are to be street or highway improvements. When you get the tip, turn to these pages, if you do not make pavers, and finding the paving brick plant nearest to you, send it the tip. That manufacturer will get a representative on the ground and your information may mean a permanent, durable brick pavement to which you can point with pride and at the same time feel that it stands as a lasting monument to burned clay—YOUR material.

Suppose you are not a tilemaker and ascertain that some farmer is going to buy a quantity of tile and because there is no convenient tilemaker in the vicinity or the concrete man is active, he considers concrete. Tip off the nearest tilemaker, for every foot of clay tile that goes into the soil around you is a lasting monument to burned clay—YOUR material.

Suppose, you are a brick manufacturer and you learn that some one in your vicinity is going to build a furnace that will require a fire-resisting material. Look at the pages of advertising that the refractories carry in this magazine and tip off the nearest one.

Suppose that every clayworker—the tilemaker, the sewer pipe manufacturer, the face brick and common brick manufacturer, the paving block manufacturer, the hollow block maker, the potter, the floor and wall tile man—in fact ANY and ALL the members of the various branches of the great clay product industry—suppose that each and everyone of these were working in a spirit of co-operation as suggested here—what would be the result?

Be Generous to Your Fellow Clayworker—Boosting Him Boosts Yourself

Increase the Sale of your Output

Our booklet, "HINTS ON FARM DRAINAGE", if distributed among the farmers in your vicinity will convince them of the practicability of using drain tile. Send for sample copy. :: :: ::

BRICK AND CLAY RECORD, Chicago

THE DECKMAN-DUTY BRICK CO.

CLEVELAND, OHIO.

THE HOME OF MEDAL BLOCK AND THE BEST BRICK PAVED CITY AND COUNTY IN THE WORLD

"Licensee of Dunn Wire-Cut-Lug Block. The *Best* and most suitable form of *Paving Block for Road Way Improvements* in use with the *Cement Grout Filler.*"

BRICK MAKERS

Many of the largest users in your line, after costly competitive tests and experiments, are now specifying—

Evens & Howard Fire Brick

BECAUSE OF

QUALITY, PRICE AND SERVICE

We will be pleased to furnish complete information and quote prices on request.

EVENS & HOWARD FIRE BRICK COMPANY
SAINT LOUIS

Established 1856

HENRY MAURER & SON

Manufacturers of

High Grade Fire Brick

Our "Henry Maurer" No. 1 quality Fire Brick is recognized throughout the country as a standard article. We make all shapes and sizes for kiln-work and all other requirements. Catalogues on application. We solicit your inquiries.

Office: 420 East 23rd St. New York, N. Y.

Works: Maurer, N. J. (On L. V. R. R. and C. R. R., N. J.)
Philadelphia Office: Pennsylvania Building

AJAX

FIRE BRICK

Two of the many hundred kilns built of these famous brick. Are you using them?

Write for price and catalogue.

Chicago Retort & Fire Brick Co.
195 So. Clark St., CHICAGO

FIRE BRICK

DOVER FIRE BRICK CO.

Incorporated 1870

—— MANUFACTURERS OF ——

Dover and Buckeye Fire Brick

Unexcelled for Kiln Purposes

509 Cuyahoga Bldg. Cleveland, Ohio

Fire Brick Facts For Kiln Builders

Do not overlook the quality of Fire Brick used in inner walls, crowns and fire arches of your kilns; this is all important. When fire brick begin to give away the whole kiln is impaired.

No brick construction will stand under strain of gradual contraction account of poor quality fire brick.

Consult us in advance of placing your orders.

Davis Fire Brick Co. Oak Hill, O.

The Barber Asphalt Paving Co.

Manufacturers of the Famous

Des Moines "Buckskin" Pavers

DES MOINES, IOWA

PURINGTON PAVERS

ARE MADE OF

GALESBURG SHALE

The Purington Paving Brick Co.

GALESBURG, ILL.

PAVING SIDEWALK
BUILDING FOUNDATION

BRICK AND BLOCK

The Barr Clay Co.

C. C. BARR, Pres.
STREATOR, ILL.

Sterling Brick Company

OLEAN, N. Y.

Manufacturers

OLEAN BLOCK

Dunn-Wire-Cut-Lug

Made from shale
VITRIFIED

Many are not as good,
A few may be as good,
None Are Better

CLINTON PAVING BRICK CO.

CLINTON, INDIANA

Are manufacturers of repressed vitrified shale paving brick of unquestioned merit and also licensees of DUNN'S Wire-Cut-Lug Block, which is the acme of perfection for street paving material.

Write us for samples and prices.

Clinton Paving Brick Company
Clinton, Indiana

Marion Brick Works
MONTEZUMA, IND.

MARION PAVERS

A Strictly High Class Paving Block

Also:
- Fancy Face
- Building Brick,
- Colonials,
- Antiques, Etc.

Murphysboro Paving Brick Co.

Manufacturers of

THE CELEBRATED EGYPTIAN PAVING BLOCK

THE BLOCK THAT STANDS THE TEST

Prices and samples furnished upon application

MURPHYSBORO, - ILLINOIS.

Alton Brick Company

Makers of High Quality Brick for

Roadways and Permanent Buildings

Repressed and Dunn Wire-Cut-Lug Block.

ALTON, ILLINOIS

Buffalo Brick Co.

Manufacturers of High Grade

Paving Block

Buffalo Kansas

The Alliance Clay Product Company

Manufacturers of the Famous

Speedway Block

Also High-Grade Building
and Face Brick

ALLIANCE - - - - OHIO

Bessemer Limestone Company

Manufacturers of

Bessemer Block

Repressed and Dunn Wire-Cut-Lug

YOUNGSTOWN, OHIO

The United Brick Company

GENERAL OFFICE
GREENSBURG, PA.
WORKS
CONNEAUT, OHIO

Manufacturers of Wire Cut Lug Paving Brick
(DUNN PATENT)

*A High Grade Paving Block for
City Streets and Main Highways*

The Harris Brick Co.

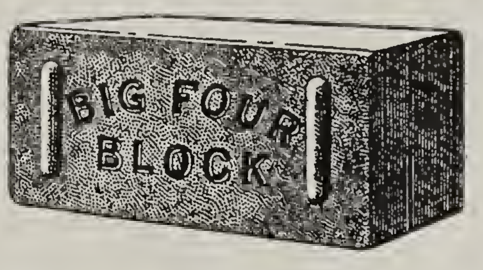
Manufacturers of

HARRIS PAVERS

Factory:
Zanesville, Ohio

Office:
St. Paul Bldg.
Cincinnati, O.

A Uniform Block which makes an Ideal Pavement



THE BIG FOUR CLAY CO.
City National Bank Bldg. Canton, Ohio

The Cleveland Brick and Clay Co.

MANUFACTURERS OF

1032 Engineers Bldg. Cleveland, Ohio

The Nelsonville Brick Co.

Nelsonville, Ohio

Pioneer
Paving
Block
Manufacturers

Established 1887

Merely advertising as the BEST doesn't make it BEST!
"Who Ever Saw Paper Refuse Ink?"

Ironstone Block

Out tested every block tested in competition with it during 1913.

For Heavy Traffic Streets and Freight Yards

Terre Haute Vitrified Brick Company
Terre Haute, Indiana

The Danville Brick Company
Manufacturers of
The Unsurpassed Danville Paving Block
DANVILLE, ILL.

LET US QUOTE YOU PRICES

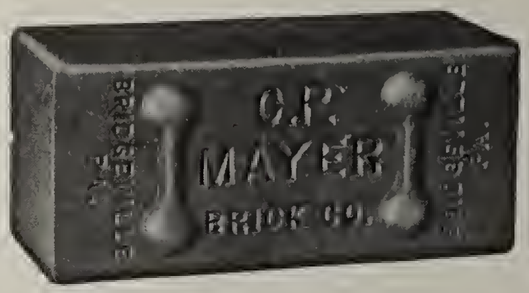
SHAWMUT VITRIFIED PAVING BRICK WORKS
SHAWMUT, PA. Alfred Yates, Gen. Mgr.

Vitrified Shale and Fire Clay
Paving Bricks and Blocks

Burned in Yates' Patent Kiln

SAMPLES AND PRICES ON APPLICATION

C. P. MAYER BRICK CO.
BRIDGEVILLE, PA.



The Mayer Blocks will stand a better abrasion test than the *Best Paving Blocks made.*

F. W. LUCKE & CO.
1217 Chamber of Commerce
Telephone Main 5140 CHICAGO, ILL.

Manufacturers Agents of
High-Grade Paving Brick

"Best Paving Block Made"

Daily Capacity **500,000**
The Metropolitan Paving Brick Co.
Canton, Ohio

Modern Brickmaking
By A. B. SEARLE

440 Pages 260 Illustrations $5.00 Post Free

THE NEWEST and BEST OF ALL CLAYWORKING BOOKS prepared by a famous authority in clay products manufacture, qualified to give the trade the latest and best information regarding clayworking processes.

"BRICK AND CLAY RECORD"
445 Plymouth Court, Chicago

It is a Policy That Brings Results

The National Paving Brick Manufacturers' Association stands for the proper construction of Vitrified Brick Pavements. It responds fearlessly and courageously in the interest of the taxpayers by giving proper engineering advice upon any and all occasions affecting the interest of municipalities. These are the results that follow:

Economy in street improvements.
Satisfaction to the users and non-users of roadways.
A sanitary condition is afforded.
The nearest possible approach to a dustless town.
Even the housekeeper is favorably affected.
A street that is pleasant to the eye.

All these favors go to patrons of vitrified brick for street improvements upon one condition, namely—that they follow our "No. 1 Directions." They are easily understood and all the details are easily executed. What the manufacturers receive, leave it to us. We know that in the end all this means more brick.

National Paving Brick Manufacturers' Association

Will P. Blair, Secretary

Cleveland, - Ohio

STRENGTH UNIFORMITY DURABILITY
REG. U.S. PAT. OFF.

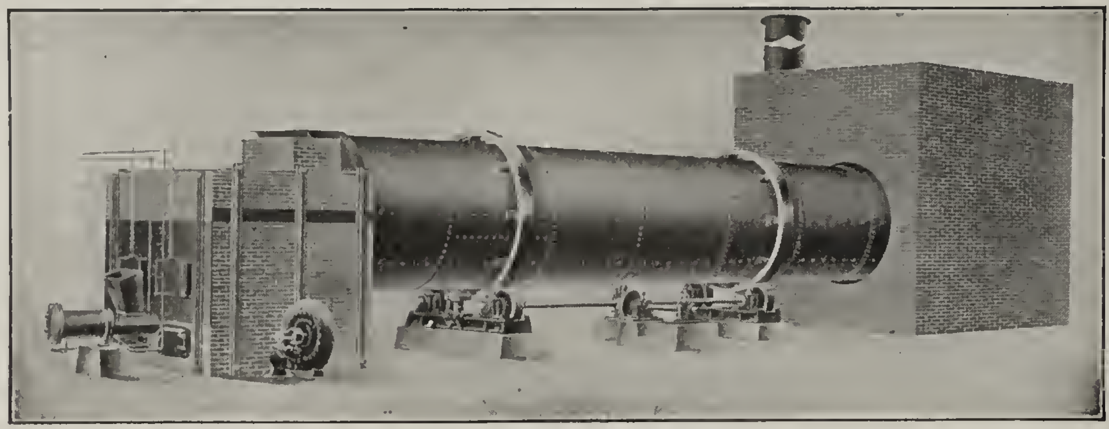
WEBB WIRE WEARS WELL

WE MANUFACTURE OUR

Red Label Piano Wire

particularly for Brick and Tile Cutting. All our Steel is made especially for us in Sweden, and we temper and draw the wire to withstand abrasion. It is strong, durable and uniform. You can buy it either in coils or in looped lengths. Our loops are twisted and wrapped, then soldered, which gives the maximum strength of eye.

THE WEBB WIRE WORKS
NEW BRUNSWICK, N. J.



ROTARY CLAY DRYER

DRY YOUR CLAY

AT LOW COST

YOU CAN THEN OPERATE IN ANY WEATHER OR SEASON

It Assures Uniform Product

YOU CAN THEN SCREEN TO ELIMINATE PEBBLES, ETC.

American Process Co.
68 William Street
NEW YORK

Style No. 12

A Time and Money Saver

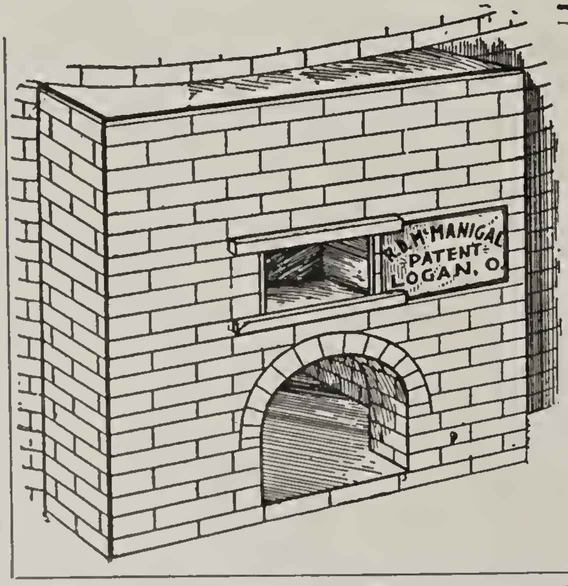
We make a Steel Pallet that is just exactly what your class of work requires

Our line of manufacture covers the entire Steel Pallet field.

No matter what pattern you need. If you require something quite out of the ordinary, so much the better. We can make it right, deliver it promptly and for the least price. Because we are specialists in this particular line.

Simply let us know what you need or send for complete descriptive matter.

The Ohio Galvanizing & Mfg. Co.
Niles, Ohio



THE McMANIGAL GRATELESS FURNACE

For burning brick or clay products. This furnace is constructed without the use of grates, thus saving the expense of installing and repairing. It is so constructed that your coal is coked and you get the benefit of all gases and heat. Absolutely nothing lost. Reduces your fuel cost from 15% to 40%, besides saving from one to three days' time in burning.

Write for information. Will furnish most modern plans for round or rectangular, down draft kilns.

These furnaces are covered by patents both in the United States and Canada. A representative for the introduction and sale of them in Canada is solicited. All infringers will be prosecuted.

A FEW OF THE PLANTS NOW USING OUR FURNACES

Cleveland Brick & Clay Co., Cleveland, Ohio.
Bradford Pressed Brick Co., [2 plants] Bradford, Pa.
Bradford Fire Proofing Co., Bradford, Pa.
John Kline Brick Co., Cleveland, Ohio.
Alumnia Shale Brick Co., [2 plants] Bradford, Pa.
Sterling Brick Co., Olean, N. Y.
Latrobe Brick Co., Latrobe, Pa.
Yingling Martin Brick Co., Johnsonburg, Pa.
Alliance Clay Products Co., Alliance, Ohio.
Wadsworth Brick & Tile Co., Wadsworth, Ohio.
Brighton Fire Brick Co., New Brighton, Pa.
Johnstown Clay Products Co., Johnstown, Pa.
New Mexico Fire Brick Co., Gallup, N. M.
Bloomsburg Brick Co., Bloomsburg, Pa.

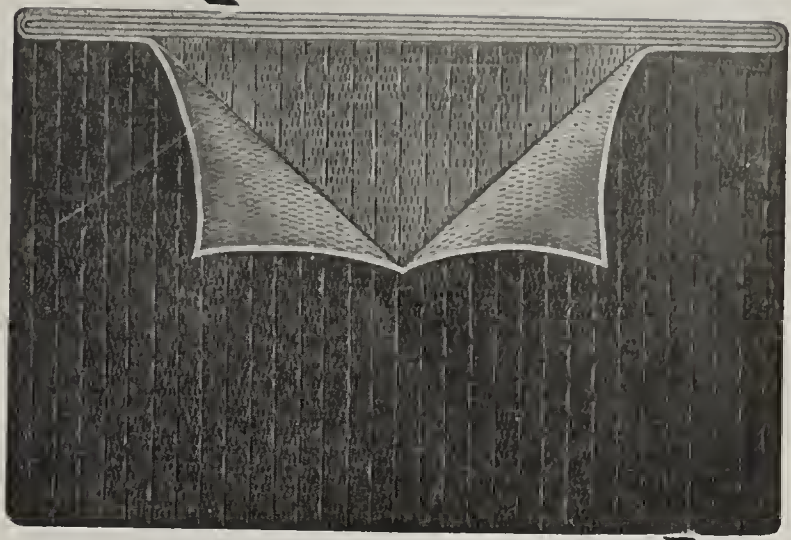
Address R. D. McMANIGAL, Mgr., Logan, Ohio

5 Reasons Why

Every Clay Products Plant Should Use For Transmission Conveying and Elevating

REXALL

Double-Stitched Belting



1. We use a 36 ounce hard woven duck base, **the heaviest ever used in belting.**
2. We use protected inner stitches, so that **the plies cannot open up.**
3. We use a laminated construction, so that **the bucket bolts and fasteners do not pull out.**
4. We use a filler not affected by heat and cold, so that **Rexall Belting keeps pliable and does not get hard.**
5. We use a double rounded edge construction, so that **Rexall Belting withstands edge abrasion.**

Why Not Investigate Before You Buy That Next Belt?

Imperial Belting Co. Chicago

WARNING!

During the busy season of 1913 it was impossible for our factory to supply the demand for the Mathew's Standard Gravity Brick Conveyor. Many manufacturers were unable to secure the advantages of this modern method of handling brick simply because they waited too long before placing their order. It won't be our fault if those who are still unsupplied fail to heed this warning to order well in advance of next season's rush. We are now booking orders for immediate delivery as well as spring delivery. Give us plenty of time and thus avoid disappointment. Catalog and full information on request.

The above picture tells a story of economy so plainly that little needs to be added. You don't need experienced "wheelers" when you load brick by gravity. Any kind of help—even boys—can be employed profitably. Put the brick on in the kiln and take them off in the car; the brick will travel quickly, without power, between the two points. No injury to brick. Carrier never shirks, never tires, never quits; never disappoints you.

SPEED — The Mathews Way — MATHEWS GRAVITY CARRIER COMPANY — The Saving Way — ECONOMY

Main Office and Factory:
ELLWOOD CITY, PA.

Branch Factories:
TORONTO, ONT.
LONDON, ENG.

You Lose

thousands of dollars each year by burning excess fuel and in poor ware in trying to guess at the temperature of your kilns and dryers.

Why not install Brown Pyrometers

and know what temperature you are carrying without guessing at it? Better write today for a catalog.

The Brown Instrument Co.

Established 1860 **PHILADELPHIA, PA.**
Branches: New York, Pittsburgh, Chicago

(3)

Handle Your Clay With One Man and

The Thew Steam Shovel

Especially adapted for brickyard requirements. The shovel operates in a complete circle, enabling material to be delivered at side or in rear at will. The dipper is hung from a horizontally moving carriage and can be adjusted to any desired level.

Only One Operator Required. Wire Cables used instead of Chains. Strictly First-class in Every Detail. Made in Five Sizes. Mounted on Car Wheels or Traction Wheels. : : : : :

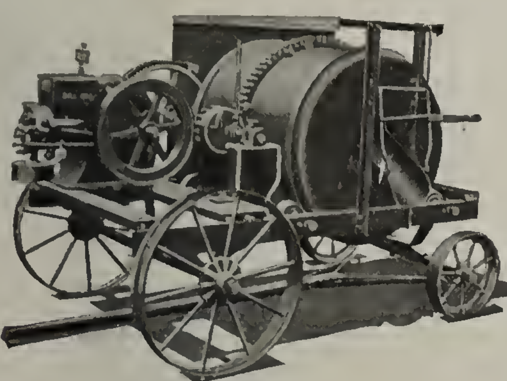
Economical for brickyards 30,000 or more daily capacity.

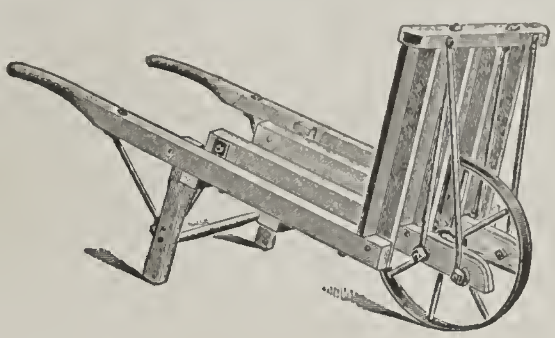
Operated by one man for outputs up to 125,000 bricks per day.

Write us for Catalogue and Information

TYPE No. 1 SHOVEL

The Thew Automatic Shovel Co., LORAIN, OHIO.





THE
BIG LANSING LINE

Comprises

Brick Barrows
Clay Barrows
Industrial Cars
Mixers
Etc.

Comprises

Trucks
Concrete Carts
Scrapers
Wheels and Casters
Etc.

We build our goods to meet the demands of a discriminating trade. Our catalog B. & C. we believe will interest you—Our prices we know will. Write our nearest warehouse.

LANSING = COMPANY, LANSING, MICHIGAN
SOUTHERN FACTORY, PARKIN, ARKANSAS

CHICAGO, 169 West Lake St. NEW YORK, 288-289 West St. KANSAS CITY, 923 Mulberry St. MINNEAPOLIS, 330-334 1st St. No.
PHILADELPHIA, Willow and N. Amer. Sts. SAN FRANCISCO, 338-348 Brannan St. BOSTON, 78 Cambridge St., Charlestown, Dist.

American System Sandstone Brick Machinery

JACKSON & CHURCH CO.

321 N. Hamilton Street SAGINAW, MICH.

Designers and Builders of

SAND LIME BRICK PLANTS

**Beet Pulp Dryers and Presses, Dredging, Mining and Hoisting Machinery
Boilers, Tanks, Light and Heavy Forgings and Castings, etc., etc.**

TORONTO BRICK CO., LIMITED, TORONTO, ONT.—44,000 PER DAY CAPACITY

The Toronto Brick Co., Ltd., write under date of Oct. 12th, 1912—

"On Sept. 30th we closed our year, and in starting on the new, would say that the two presses have been running continuously since they were purchased of you. Last year we made ten million brick and would have made more had we not closed down some time to install wet pans. The presses still are in as good condition as when installed seven years ago, and the record they have made is astonishing when compared to what other plants are doing. Our repairs last year were 15c per M, and we are so pleased with the results that you are at liberty to make use of this letter."

Free Service Bureau

"Brick and Clay Record" receives many requests daily for information from its readers. Some correspondents want to solve difficult problems in the kiln or other parts of the plant. Others want to buy machinery, tools, equipment, supplies or materials and ask us to recommend what is best suited for the purpose and to give them advice and suggestions.

Many Thousands Ask Questions

During the course of a year many thousand readers rely on "Brick and Clay Record" to answer all sorts of questions.

The demands made on the editorial and business departments of the magazine have become so great that it has been found necessary to create a special department to take care of the numerous inquiries.

This new department is called "Brick and Clay Record's Service Bureau." It is in charge of a competent executive who has a special staff of assistants. Expert engineers, superintendents, kiln men and others are at the call of this Bureau and there is no subject or problem in the clay plant that cannot be treated.

What We Do

Immediately upon receipt of a communication asking where the writer can obtain a certain tool, machine, equipment, materials, supplies or any article that is not advertised in our magazine, we write to manufacturers or sellers whom we know to be reliable and can furnish goods promptly.

Letters are sent out the same day the request is received and the best possible information is given in every case.

How We Do It

Should a reader want us to solve some knotty tangle in the tempering or mixture of clay, in its handling or burning, we turn his inquiry over to one of the practical experts who can best answer the question, secure the solution and forward it to the subscriber.

"Brick and Clay Record" has given free information in this way to thousands of readers every year.

Why We Do It

Some friends ask us why we go to all this trouble and yet not make any charge for it.

"Brick and Clay Record" readers depend on this publication for information and it is our purpose to see that their wants are supplied. We feel it is not enough for us to print a good magazine and do it twice a month at a nominal charge. Our promise to do anything to enlighten the clay worker goes beyond that.

Do Not Hesitate to Ask for Any Information Wanted

Expense is not considered and the most painstaking care and attention is given to any request sent to our Service Bureau. We most cordially invite our readers to make full use of it at any and all times.

If you want to get expert service on any problem of burning, manufacturing, engineering, or if you want information about work that you do not understand, state such particulars as will help us to give you an intelligent answer to your questions.

If you want to buy anything, or if you want more information about something that is not advertised in "Brick and Clay Record," or if you want to know more about something that is advertised, fill out the coupon below. We will place you in touch with manufacturers or dealers who will furnish you with just what you want and at the best prices.

USE THE COUPON IN WRITING

Brick and Clay Record,
Service Bureau,
447 Plymouth Court, Chicago, Ill.

Gentlemen: We want some information about the items below in front of which we have placed a cross. Please put us in touch with concerns whom you know to be reliable.

(....) Analysis of Clay.
(....) Barrows and Trucks.
(....) Belting.
(....) Blowers.
(....) Boilers and Engines.
(....) Brick Machinery.
(....) Cables and Cableways.
(....) Cars and Trucks.
(....) Chemicals.
(....) Clay Feeders and Mixers.
(....) Clay Gatherers.
(....) Crushers and Pulverizers.
(....) Cutters.
(....) Disintegrators.
(....) Dryers.
(....) Dry or Wet Pans.
(....) Elevators and Conveyors.
(....) Engineers.
(....) Flue Blowers.
(....) Full Equipment.
(....) Gears and Castings.
(....) Hollow Block Machinery.
(....) Kilns, Kiln doors, frames, lugs and bands.
(....) Molds or Mold Sanders.
(....) Oil Burners.
(....) Pallets and Trays.
(....) Pyrometers.
(....) Railway Equipment (Indus.).
(....) Represses.
(....) Screens.
(....) Sewer-Pipe Machinery.
(....) Shovels (Steam or Hand).
(....) Trucks (Motor).
(....) Tile Machinery.
(....) Tramways (Aerial).
(....) Wagons.
(....) Miscellaneous.

(Signed) .... (Address) ....

BUILT FOR ENDURANCE

The first goal we sought in designing the "New Haven" Soft Mud Brick Machine was ENDURANCE. The second was CAPACITY. The question of cost did not enter into our plans and never has. We knew if we attained THESE two goals we would SOLVE the ECONOMIC problem.

The New Haven

therefore, stands today among all Soft Mud Brick Machines as the highest type of mechanical perfection.

Unlike those manufacturers who made the mistake of thinking first of COST and SERVICE later, we do not have to make excuses for the "New Haven."

We never have had a "New Haven" replaced by any other machine.

We never have had any complaints about repair bills.

We never have had any complaints about failure to give full service every day in the week—every week in the year.

The New Haven

costs a little more to BUY but manifestly LESS to RUN. This is true also with a well-made, all-wool tailored suit of clothes. And like the well-made clothes the "New Haven" LASTS LONGER and gives MORE SERVICE.

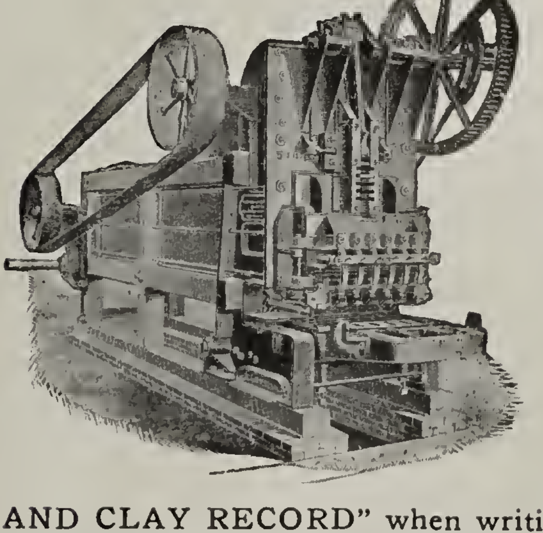
Figuring from a common-sense business basis the "New Haven" is cheaper after all.

We have a catalogue which tells all about the "New Haven". It costs you nothing to get it but the effort to ask for it.

The New Haven

A "New Haven" erected on a certain yard twenty years ago has been in continuous use, making an average of 1,000,000 brick per month.

Continuous results determine the economic value of a machine rather than first cost. The "New Haven," for that reason, proves the least expensive.

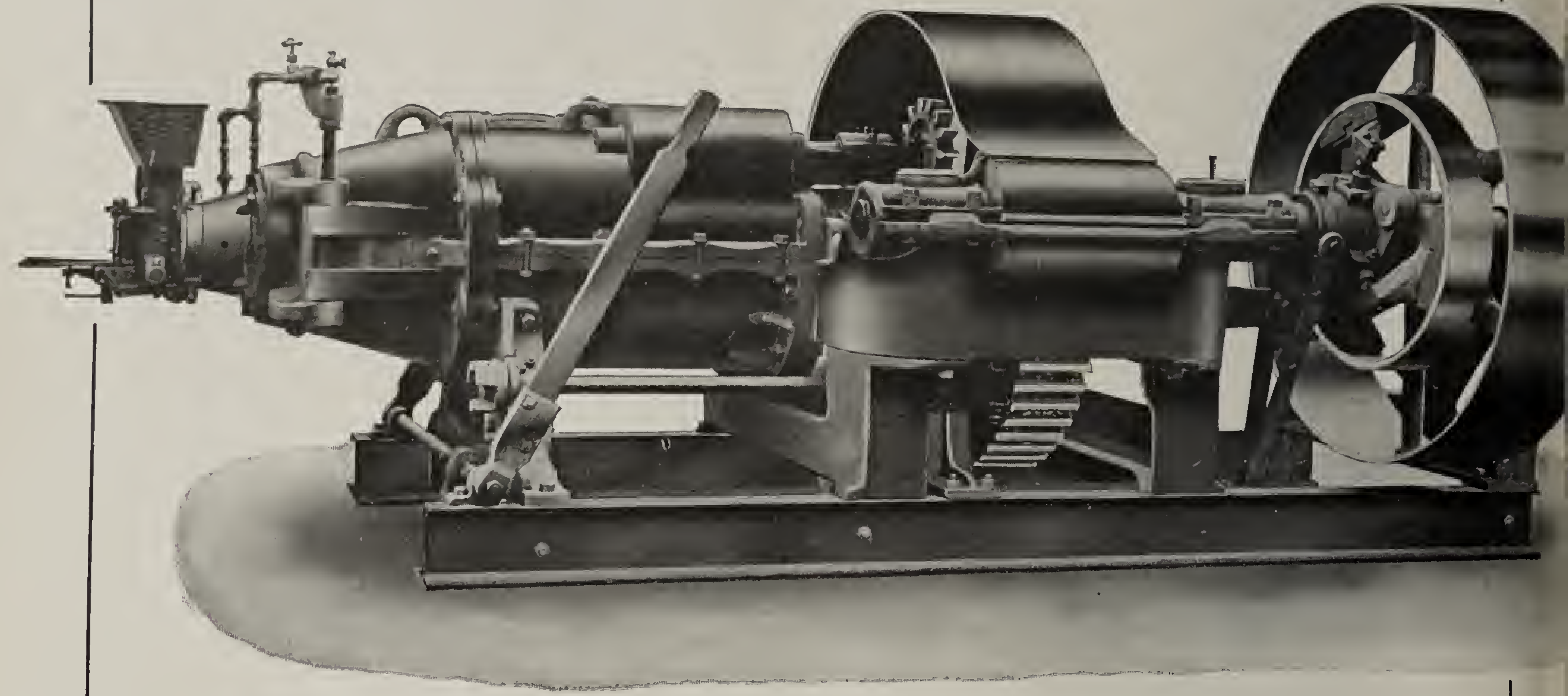


The Eastern Machinery Co.
New Haven, Conn.

The Eastern Machinery Co.
New Haven, Conn.

Mention "BRICK AND CLAY RECORD" when writing to advertisers.

Special Attention Given to Medium and Small Plants

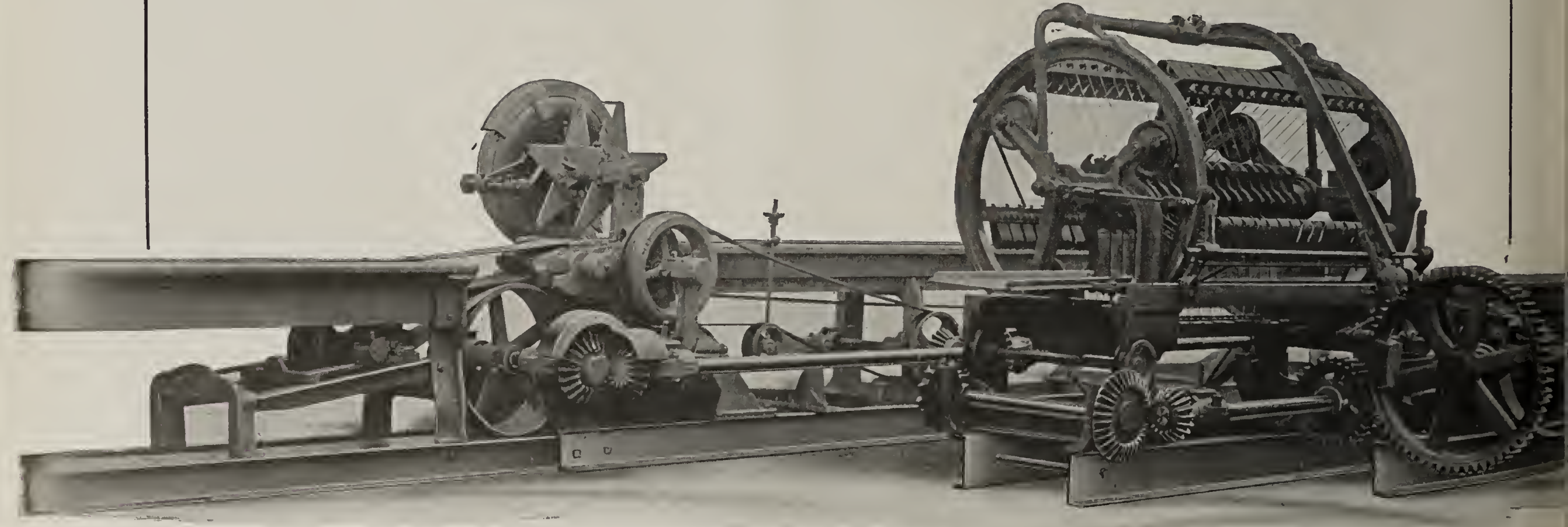


Our machines for small capacities receive just the same attention as our larger machines. We know the requirements of the small brickmaker by long experience, and have given special attention to simplifying and improving these machines. We think it better policy to carefully consider the necessities of our customers rather than to load them up with machinery not suited to their conditions. With our machines, you are at no disadvantage with the large plants.

We will be glad to help you if you are having any kind of troubles.

J. C. STEELE & SONS, Statesville, N. C.

Manufacturers of the Better Kind of Brick Machinery



STEELE'S END AND SIDE CUT CUTTING TABLES

IF MARKED **BREWER** *IT'S GOOD*

Compare the specifications of this Spiral Feeder with those of any other and you will quickly see why it is better. Take these items for example. Weight, 5,700 lbs. Spiral shafts 3 in. dia. Intermediate shaft 3 in. dia. Pulley shaft 2½ in. dia. Compare weights and specifications when you compare prices.

No. 123 Spiral Feeder

All Brewer Machines are rigid and heavy. Sometimes they may *seem* higher in price, but if you will look into their construction you will easily see that they represent *greater value* for the price than any other line.

Ask For Catalog

H. BREWER & COMPANY
Tecumseh, Michigan

A Mighty Good Investment

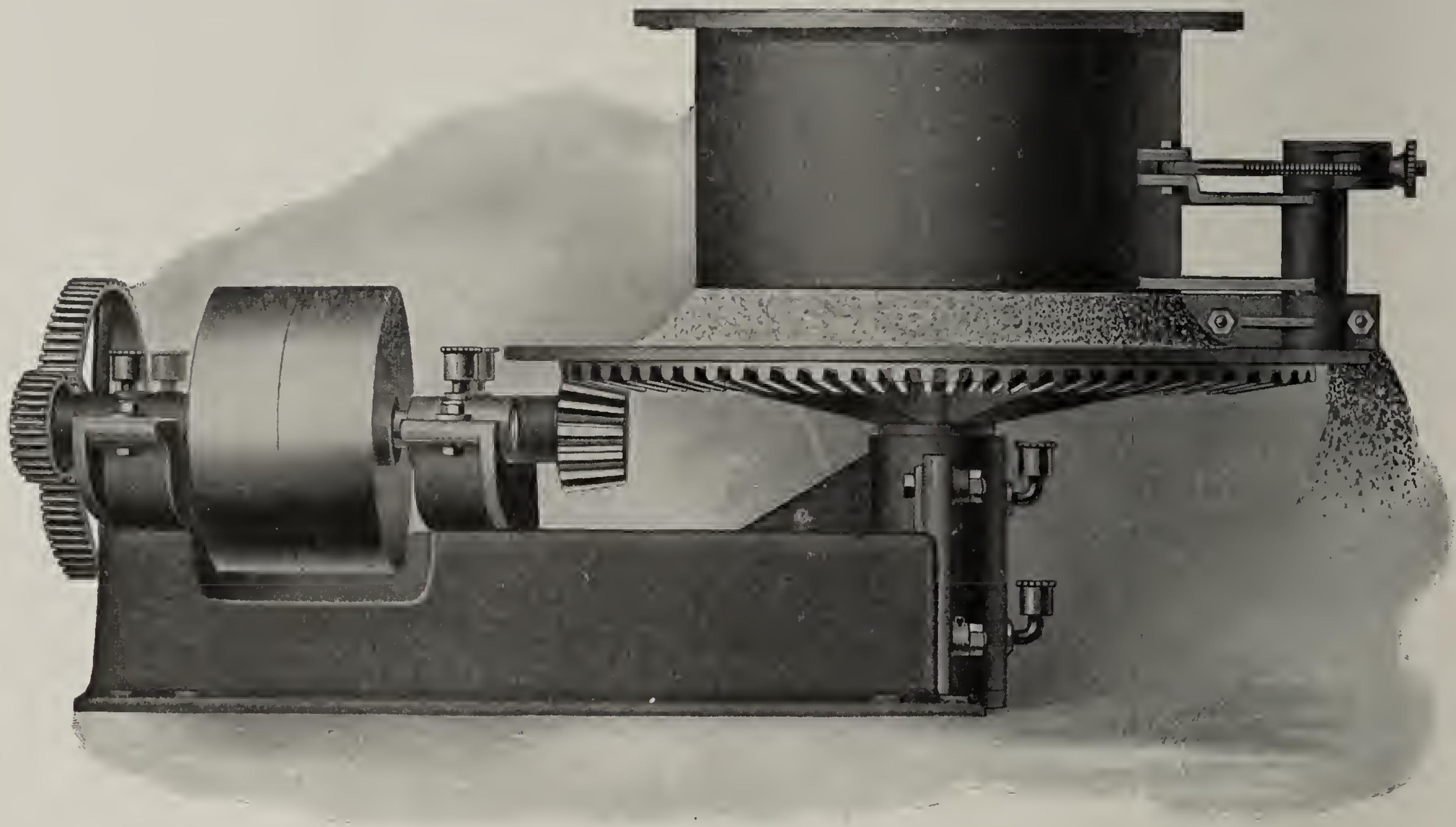
Regulating
Clay
Feeder

"Good pugging is necessary to get good brick."

A regular flow of clay to the pug mill is required for good pugging.

Are you getting it?

You can get it with a Bonnot Automatic Clay Feeder.



What it is	An Automatic device for regulating the flow of clay. Complete and ready to set in position.
What it Does	It measures just the amount of clay you want and feeds it to the pug mill in a constant stream.
What it Costs	Surprisingly little for what it will do for you. Pays for itself many times in results.
What You Should Do	Write us today for information and prices.

THE BONNOT COMPANY

CANTON, OHIO

CLAY WORKING QUALITY BONNOT SERVICE MACHINERY

909 N. Y. Life Bldg.
KANSAS CITY, MO.

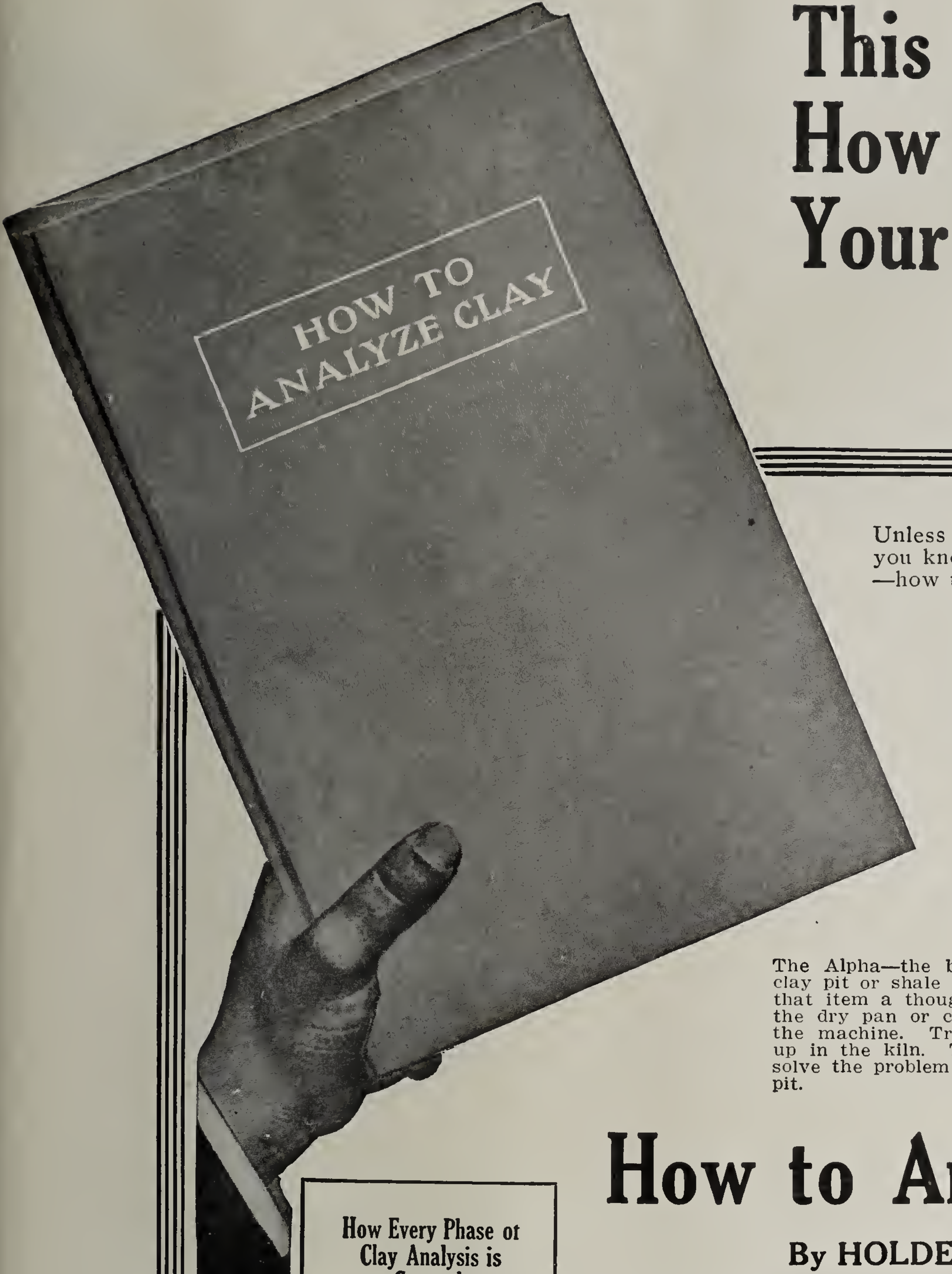
211 Higgins Bldg.
LOS ANGELES, CAL.

1020 Candler Bldg.
ATLANTA, GA.

CLAY WORKING QUALITY BONNOT SERVICE MACHINERY

This Book Tells How to Know Your Clay Better—

how to get at the source of your pit troubles



Unless you understand your clay—unless you know what it is best adapted to make—how to handle it—how to mix it—how to temper it—how to dry it correctly—how to burn it properly—you do not get the best that is in it.

No TWO clays or shales are ALIKE. No ONE method of treatment will fit ALL clays. Each individual clay or shale must be analyzed and its component parts ascertained before we can intelligently use the material.

When a new pit is opened—when a new plant is installed the first question the owner asks is: What is this clay good for? Will it make good common brick, face brick, fire brick, paving block, hollow tile, drain tile or sewer pipe?

How shall I treat this clay in order to make a certain product with the least possible outlay and waste? What is the best way to dry it? What is the best way to burn it to get the proper color and the right texture?

The Alpha—the beginning of plant troubles, is in the clay pit or shale bank, and yet so few clayworkers give that item a thought. The raw material is thrown into the dry pan or crusher and then into the pugmill and the machine. Trouble develops in the dryer. It pops up in the kiln. Time and money are wasted trying to solve the problem and no one thinks of looking into the pit.

How to Analyze Clay

By HOLDEN M. ASHBY

This book was written by Mr. Ashby as a practical handbook on clays and their analysis. Mr. Ashby, late professor of organic chemistry at Harvard College, knew the conditions existing in the average plant and he set out to tell the clayworker in ordinary English—without frills or fancy furbelows—how to take his own clay or shale and make an analysis that will be moderately accurate and then how to use the analysis so that he may improve his product.

This book, "How to Analyze Clay," gives simple rules to follow—so simple in fact that any man of ordinary intelligence, and without elaborate chemical apparatus, can take his clay and solve its mysteries.

Drawings and diagrams illustrate the text and clearly show how a home-made laboratory can be made.

The reader is taken step by step through the most simple formulas and every treatment of clay to show what it is composed of and to tell him what product it best will make.

This book is the only practical one published on the subject of clay analysis and no clayworker should be without it.

How Every Phase of Clay Analysis is Covered:

This book tells:

- How to find out the various elements in your clay or shale and their proportions.
- How to find out whether silica is present and in what quantity.
- How to find out the amount of iron present in your clay.
- How to determine whether calcium exists or not.
- How to ascertain the proportion of quartz or sand.
- How to determine the porosity, leanness or fatness, shrinkage, absorption and retention of water and all the other properties of clay.
- How to know what product your clay is best adapted to.
- How to gauge the capillary attraction of your clay—a necessary knowledge for intelligent drying.
- How to determine the proportion of organic matter in your clay and its effect in manufacture, in drying or burning.

How to Find Out for Yourself What This Book Will Do For You

Tear off the Coupon at the right—sign your name and address, and stick it with a Dollar bill in an envelope. Then mail it to us. If, when you receive the book by prepaid mail you do not like it—if you feel it is not worth the price, return it to us and we will cheerfully refund your money.

Send This Coupon Today!

Brick and Clay Record,
445 Plymouth Court,
Chicago

Dear Sirs: Enclosed find $1 for which send me, postpaid, the book "How to Analyze Clay." Upon its receipt, if I am not satisfied with it, I am to return it at your expense and receive the purchase price given you.

(Signed) ....
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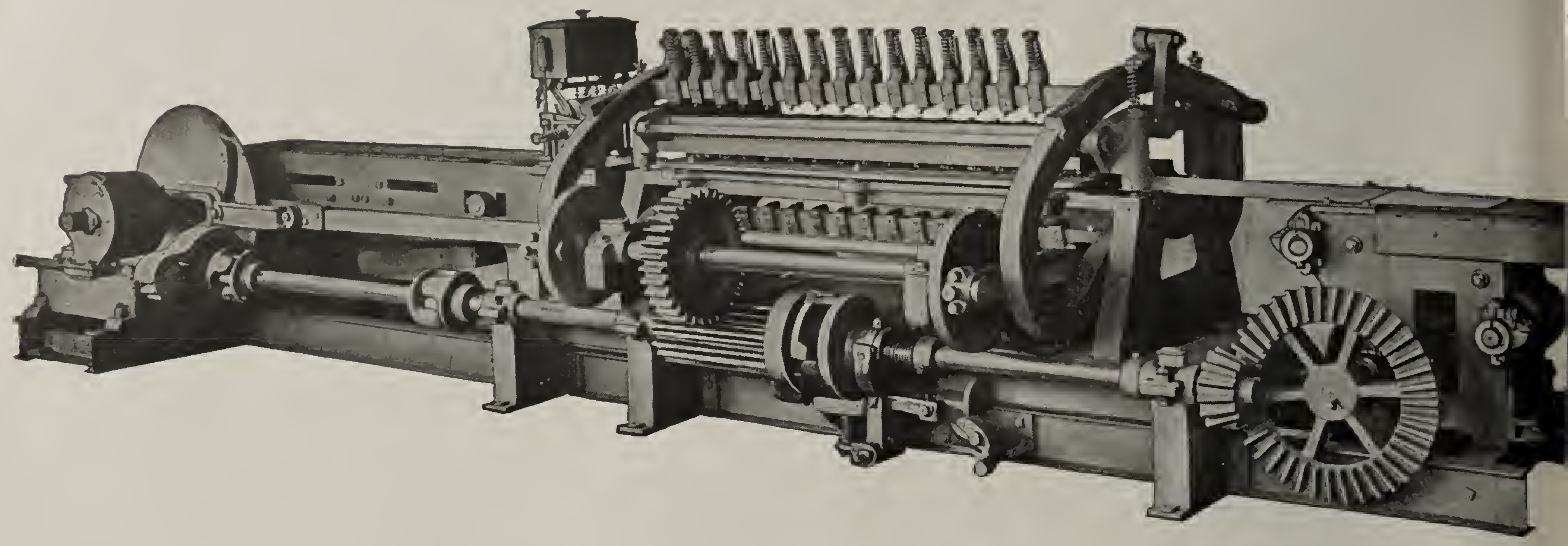
City and State ....



Model T 60 Reciprocating Automatic Cutter

This cutter, which is of the reciprocating type, is built in two Models "T 50" and "T 60" for capacities up to 15,000 brick per hour, or more. The design is extremely simple and substantial. It embodies many of the well tried features of our Rotating Automatic Cutters.

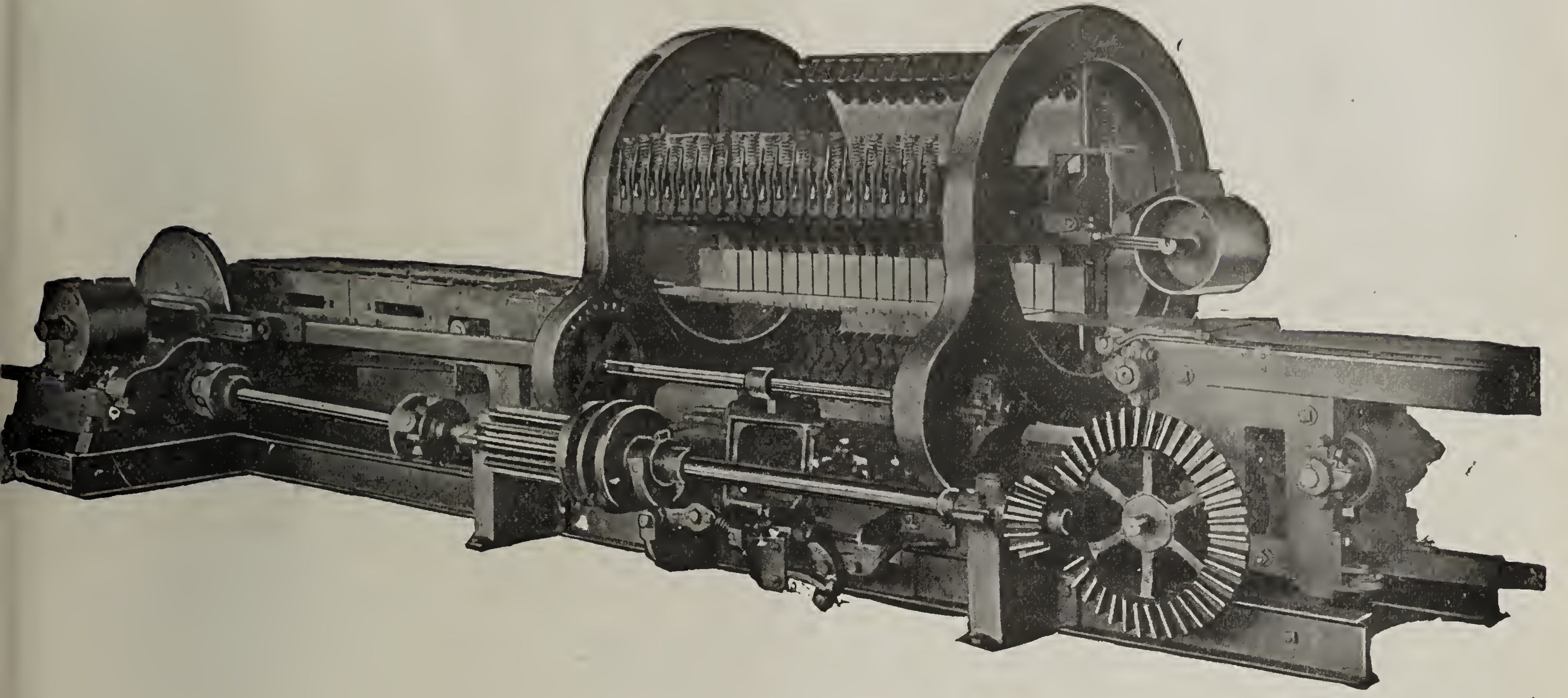
The cutting frame carries only one set of cutting wires, and has a swinging movement, avoiding the wear and play common to sliding parts. It is actuated by cranks, driven by a single gear and pinion, giving a smooth, quiet starting and stopping of the cutting stroke. The frame remains stationary between cuts, affording ample time to renew broken wires. The platens are very easily removed and replaced, when the thickness of cut is to be changed.

An upper platen (Dunn Patent) can be furnished to insure smooth upper edges on the brick. This is automatically raised to clear the clay column after the cut is completed, and is returned to position in time for the next cut, avoiding any tendency for the column to become wedged. Solves the problem of making smooth edge brick on a reciprocating cutter. Corners of the brick can be rounded without repressing.

Either Model is made to suit a variety of work. These cutters can also be especially arranged for cutting the Dunn Wire-Cut-Lug Paving Blocks. Many now in successful use for this work.

We are building a special Automatic Cutter for fire-proofing having novel and practical features.

E. M. FREESE & COMPANY, Galion, Ohio



Model C 20
Rotating Automatic Cutter

We build rotating automatic cutters in various sizes and capacities. They are successfully used for solid brick of ordinary sizes, also for hollow ware, fireproofing, radial chimney blocks, etc., up to 13½ in. by 7½ in.

The above illustration shows the Model C 20 Cutter, which is an improved model of our well-known Size 16. It is intended for capacities up to 7,500 standard size brick per hour—18 brick are cut at each cut. At this speed the cutting reel makes only a little over two revolutions per minute, remaining stationary between cutting strokes. It is not necessary to stop the brick machine to renew broken wires, as this gives ample time. (Model C 30 is similar, but has larger capacity.)

The cutting apparatus, including drive for separating belt, is entirely self-contained, being mounted upon one set of I-beam sills, assuring permanent alignment of all parts. The measuring and separating tables are built with iron or steel sides.

Cutting reel and carriage are carried on traveling rollers. No journal bearings used to support the weight. Carriage is positively moved with the clay by an accurate cam. Clutch mechanism is the simplest possible. Clutch jaws have renewable steel plates.

Wires are exactly held in position by holders of improved design, quick and convenient to operate.

Particular attention is called to the platen construction. The platen is cast in one piece of tubular cross section and is very rigid. Surfaces covered with renewable steel plates, insuring fine slots. The angle of the cutting wires has been changed to give perfect edges on the brick. Built to give long service without skilled attention. Complete description will be furnished on request.

E. M. FREESE & COMPANY, Galion, Ohio

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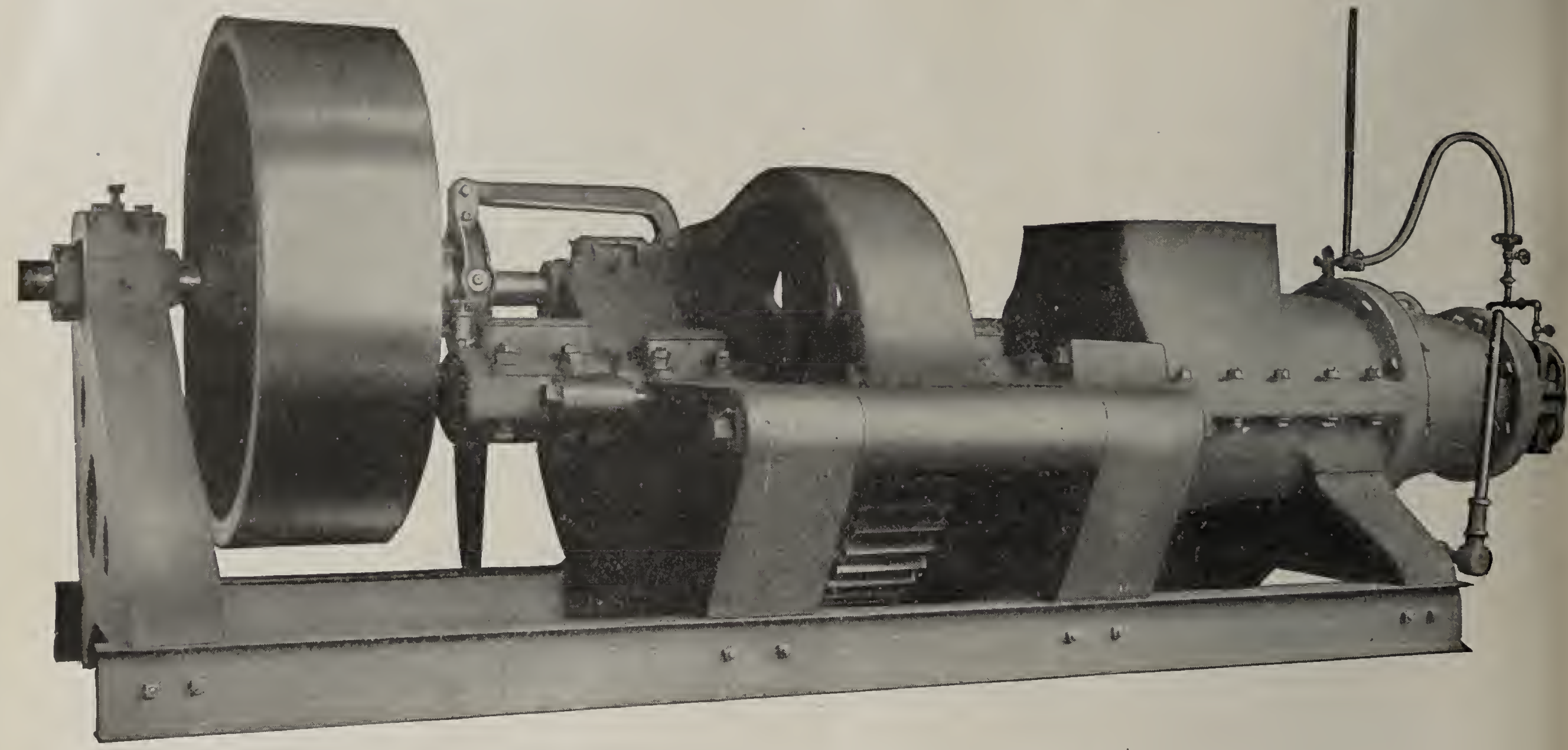
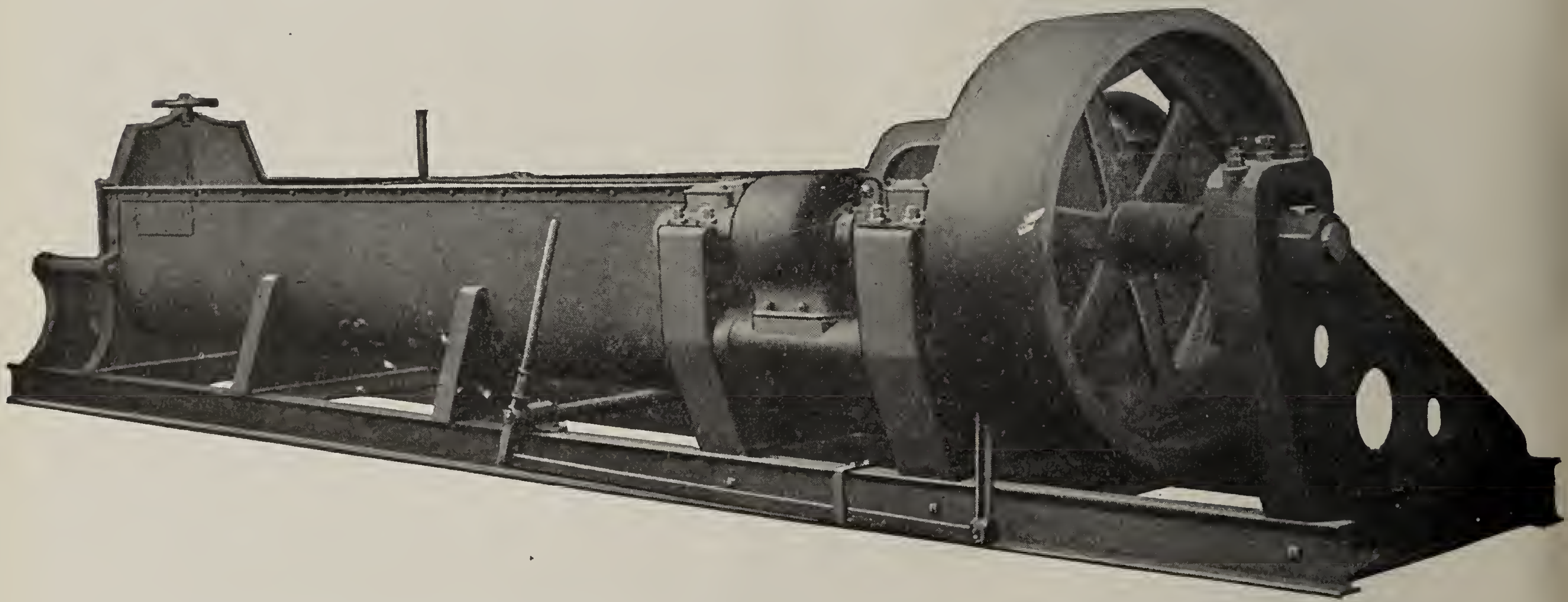


Model "GC" Auger Brick Machine

For large capacity. Extremely simple in design. Convenient access to all parts. Massive proportions. Excellent material and workmanship. Gearing running in oil if specified. Cut steel gears if specified. Special construction for fireproofing.



Model P-16 Heavy Duty Direct Gear Pug Mill

Large capacity. Hard steel pugging knives. Made to discharge as shown, or at gear end. Intended for thorough pugging and long service.

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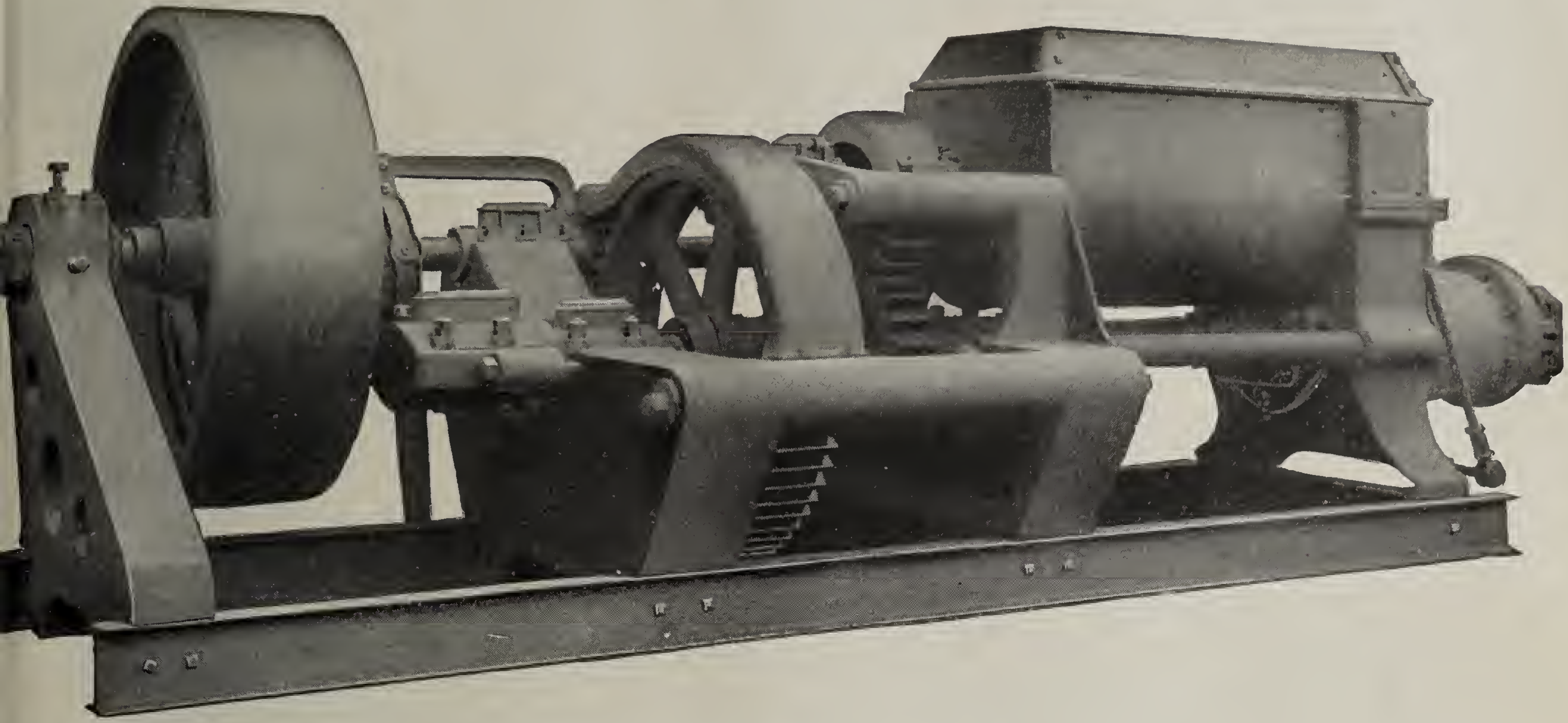
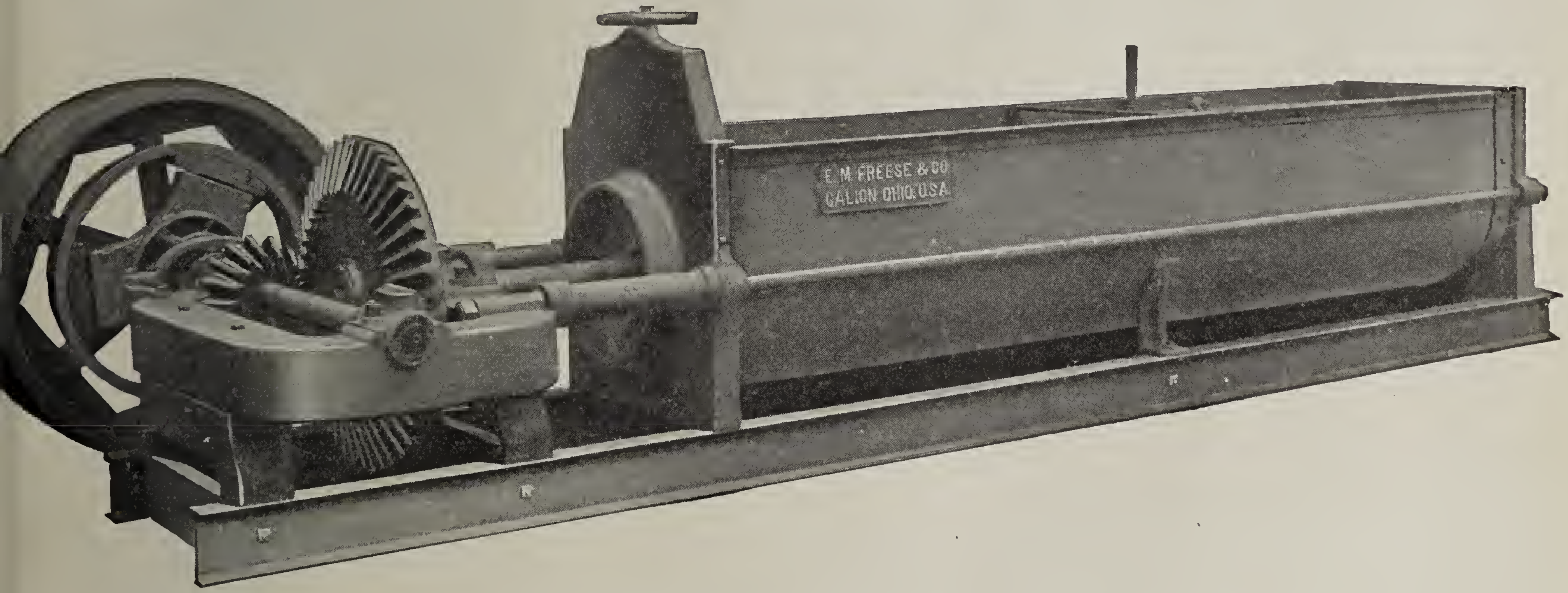


Model "KC" Brick Machine

Late model. Important improvements. Construction simplified. Direct gear. Gear running in oil, if specified. Can be modified to suit variety of product. Will do first-class work.



Model P-7 Bevel Gear Pug Mill, Gear End Discharge

We build high grade Pug Mills in many sizes, either spur or bevel gear, and either gear end or front end discharge.

E. M. FREESE & COMPANY, Galion, Ohio

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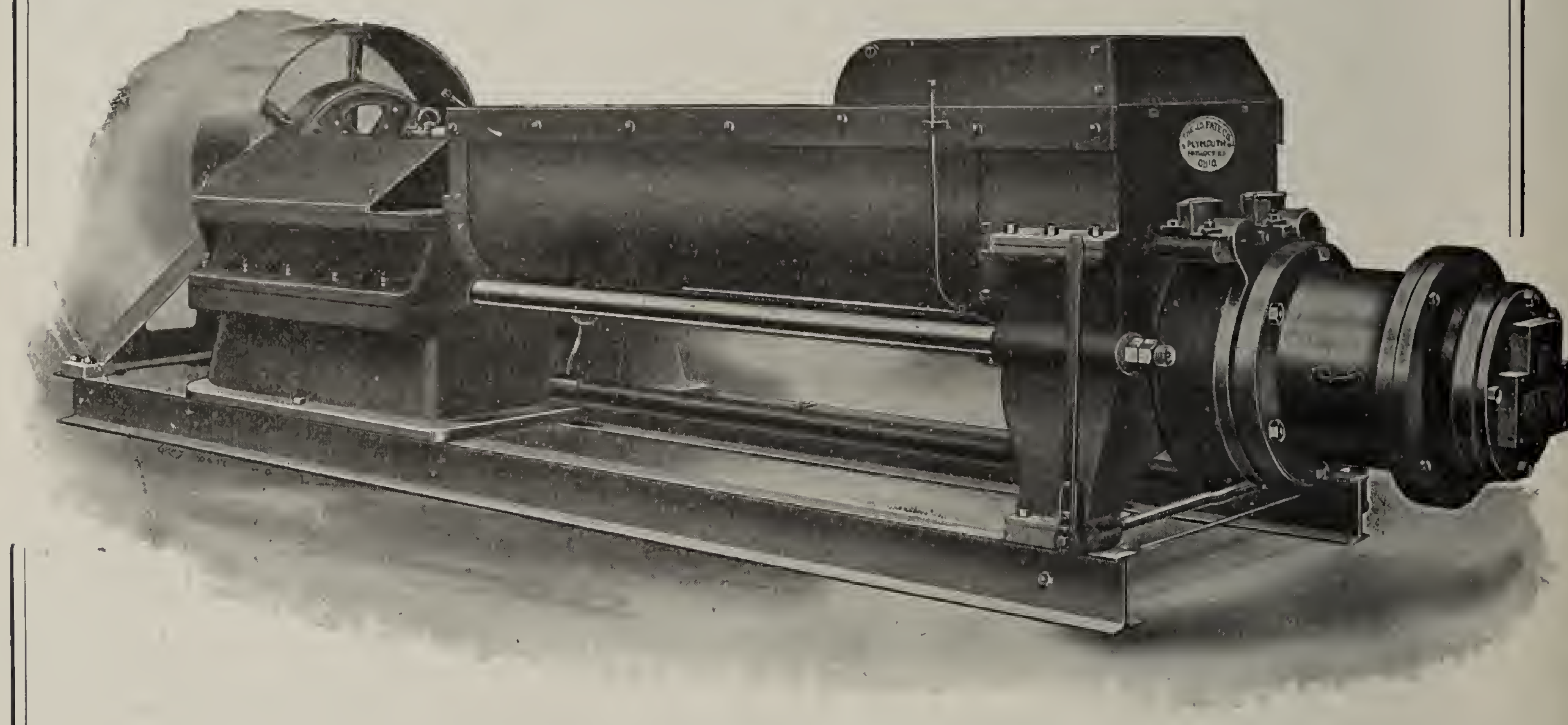
THE PREMIER LINE
THE J. D. FATE COMPANY

Quality hinges on two things—mechanical perfection and the best of material. These factors enter into the product of the House of Fate.



SPECIAL PREMIER HOLLOW WARE MACHINE

It is useless for any one to look farther for a better Hollow Ware Machine, nor even for one that will approach it. This is the machine that eventually all producers of Hollow Ware will use. Built strong and compact, with all gears running in a bath of oil in an enclosed gear case. It has already increased profits and been the salvation of a great many plants, and we can make it do the same for you. If you are interested we will be glad to tell you all about it.

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Western Office, 604 Blake-McFall Bldg., Portland, Ore., A. E. Davidson
Eastern Office: Woolworth Bldg., New York City, Jas. A. Ridgeway, Representative
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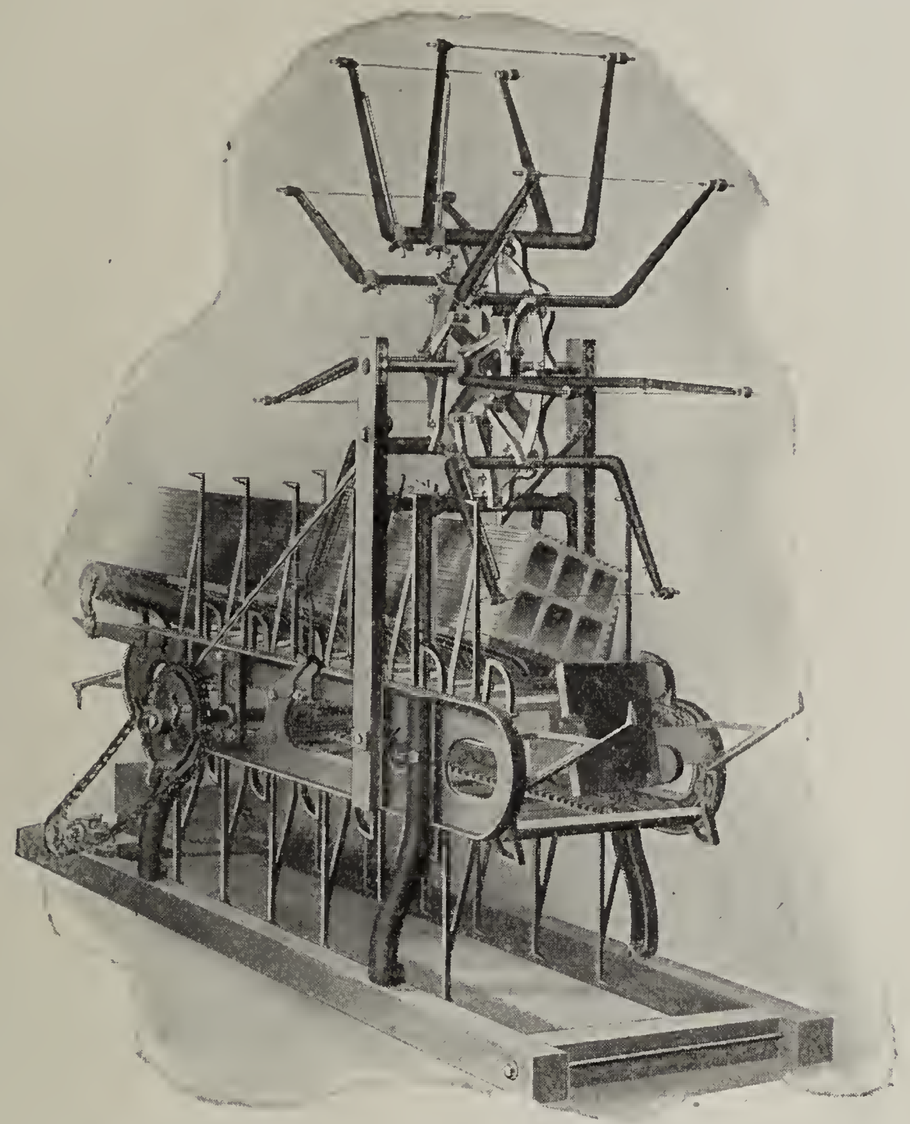
The Justice Radiated Heat Dryer—Successful Results Always Certain

The Fate Quality

Quality hinges on two things—mechanical perfection and the best material. These factors enter into the product of the House of Fate.



SPECIAL AUTOMATIC HOLLOW WARE CUTTER WITH TILTED PLATENS

Our latest contribution to the Clay Working Industry. The tilted platens raise one corner of the ware so as to affect a sort of shear cut which is almost necessary with some tender clays, and also permits of a very small wire being used which gives a nice clean cut. The movement of the reel is regulated by a friction attachment and the movement of the cutting arms by a cam attachment which prevents any lost motion in the table and gives an even straight cut on either large or small ware. Different customers who have already used it write,—"Don't see how a table can do better work." "Leaves nothing further to be desired," etc., etc.

Are you willing to try it, Mr. Reader?

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The Justice Radiated Heat Dryer—Successful Results Always Certain

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Classified advertisements are inserted at the following rates: First insertion, eight cents per word, the captions "For Sale," "Wanted," etc., to be counted as a part of the ad. Additional insertions, six cents per word per insertion. No advertisement inserted for less than $1.00 per insertion. Displayed classified ads in conformity with style prescribed at $3.25 per inch. Cash must accompany all orders.

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WANTED—Foreman; wire-cut, common. Must be perfectly competent handling foreign labor, repairs on all machinery, and get results. Want a live one and sober. Pittsburg district, best wages. Address: 12-BA, care of "Brick and Clay Record." 12-2-1

WANTED—Experienced man as salesman for face brick, plaster and cement, also take care of some correspondence. Jobbing and retail house, Indianapolis; good wages to right man. Address: 12-BD, care of "Brick and Clay Record." 12-2-1

WANTED—A man to keep up machinery in a paving brick plant and take charge of the men in that department. Good wages, but expect results in return. Please address: 122-Ohio, care of "Brick and Clay Record." 12-2-1

WANTED—Experienced and efficient manager for building brick plant in Indiana town of about 2,000 inhabitants. The right man will be paid a good salary. Address: 12-BM, care of "Brick and Clay Record." 12-2-1

WANTED—Young man as assistant to superintendent on Pennsylvania face brick plant. Particulars and references in your first letter. Address: 12-BC, care of "Brick and Clay Record." 12-2-1

WANTED—Experienced man for foreman of hard wall plaster mill to work with the men; some experience with machinery. Good wages. Address: 12-BB, care of "Brick and Clay Record." 12-2-1

WANTED—First-class shaders or sorters for plant making high-grade red face brick. State experience and wages expected. Address: 12-BE, care of "Brick and Clay Record." 12-2-1

WANTED—POSITIONS.

WANTED—A position as superintendent of a paving brick plant. Have had six years' experience in that position, one year as traveling representative and clay machinery specialist, and nine years in various other branches of the paving brick industry. Reasons for changing: I am voluntarily giving place to a fireproofing man, as I have had no experience in that line, and the clay proves to be better adapted to the manufacture of fireproofing than paving brick. Address: F. P. Nickerson, R. F. D. 12, North Tonawanda, N. Y. 12-2-1

WANTED—Position as manager or superintendent of plant. Have had practical experience with all kinds of shales, clays, machinery, kilns, fuels, etc.; making of pavers, fire, grog, mats and straight flashed face of all kinds, also tile. Would be willing to demonstrate ability 30 or 60 days before closing permanent contract. Can furnish letters of credit of the best from parties whom I have been with. Address: 12-BG, care of "Brick and Clay Record." 12-2-1

SUPERINTENDENT—Am employed but am open to negotiations with some company wanting a thoroughly competent superintendent for paving or building brick plant. Address: 12-E, care of "Brick and Clay Record." 12-2.

WANTED—Position as superintendent of press, common brick and hollow tile plant. Fifteen years' experience, am employed, but wish change. Sober, reliable, references. Address: 12-BF, care of "Brick and Clay Record." 12-2-1P

WANTED—To superintend clay product plant. Experienced in all branches of the industry, also in plant designing. Pacific coast preferable. Address: 12-BO, care of "Brick and Clay Record." 12-2-1P

FOR SALE—CLAY LANDS.

In Western Pennsylvania, in the heart of a district that produces the richest red burning shale brick, the clearest buffs, the most vitreous whites and the most velvet-like grays. In Armstrong and Jefferson Counties (look at the map and see the towns with world-wide reputations for fine brick). The "Shawmut" railroad has completed a new 100 mile extension that opens a vast tract still in first hands. The clays and shales have proven the best in their various classes for high grade, face building brick, vitrified paving block, sewer pipe and refractories. Exceptional inducements will be made to early inquirers, with a view to the development of the district. Address: N. L. Strong, Attorney-at-Law, Kittanning, Pa. 11-2-4

WANTED—MISCELLANEOUS.

WANTED—Selling agency wanted for face brick by old established Canadian firm for Montreal and Quebec territory. Will be in Cleveland, Ohio, early in January. Reply: 12-BH, care of "Brick and Clay Record." 12-2-1

WANTED—A house organ in the clayworking trade wishes to get in touch with parties who can contribute technical articles. Address: 12-X, care "Brick and Clay Record." 12-1.

WANTED—All steam users to do without using any kind of compounds or chemicals and still have clean boilers. Write "Otis," No. 390 Norfolk Ave., Buffalo, N. Y.

WANTED—SECOND-HAND MACHINERY.

WANTED—To buy two hardening cylinders, for sand-lime brick; 45 ft. long by 78 in. diameter, or one of same diameter 90 ft. long. Give full particulars. Address: 12-C, care of "Brick and Clay Record." 12-2.

WANTED—To buy complete outfit of second-hand stiff-mud machinery, small capacity. Give full description in first letter. Address: 12-BK, care of "Brick and Clay Record." 12-2-1P

WANTED—Two or three mold dry-press, second hand; disintegrator and screen. State make and condition with best price. Address: 122-Rector, care of "Brick and Clay Record." 12-2-1

WANTED—Good,. second-hand machinery and complete equipment for stiff-mud plant. Address: Box 25, Kenora, Ont., Canada. 12-2-1P

FOR SALE—CLAYWORKING PLANTS.

WILL LEASE OR SELL—If you want a snap look this up. Modern plant for hollow brick and blocks. Will lease, sell all, or part. Good market and clay. Will agree to buy back the land, at big price, when clay is used. I. C. Jones, care Minneapolis Bedding Co., Minneapolis, Minn. 12-4.

FOR SALE AT A BARGAIN—Tile and brickyard, including 52 acres of ground. Machinery and kilns in good condition. Operated by electric power. Cheap fuel, good demand at good prices. Part cash and balance on terms. For particulars, address: Kane Bros., Mt. Pleasant, Mich. 12-2-1P

FOR SALE—Face brick plant, 30,000 daily capacity, at Pittsburg, Pa., with Pennsylvania railroad siding. 8½ acres of finest Pennsylvania red shale more than 100 ft. thick. Reasonable terms. Full details on application to W. B. Trimble, 345 Fourth Ave., Pittsburg, Pa. 12-2-4P

CLAY FOR SALE—If desirous of purchasing Wisconsin clay of known quality and of ample quantity, also sure sale for product, address: 12-BL, care of "Brick and Clay Record." 12-2-1

FOR SALE—Tile factory with or without 40 acre farm. Address: Math. Fornefeld, R. 5 Delphos, O. 12-2P.

WANTED—A party as partner, or will sell brick plant, in city of Philadelphia. This is a good chance. Address: 122-N, care of "Brick and Clay Record." 12-2-1

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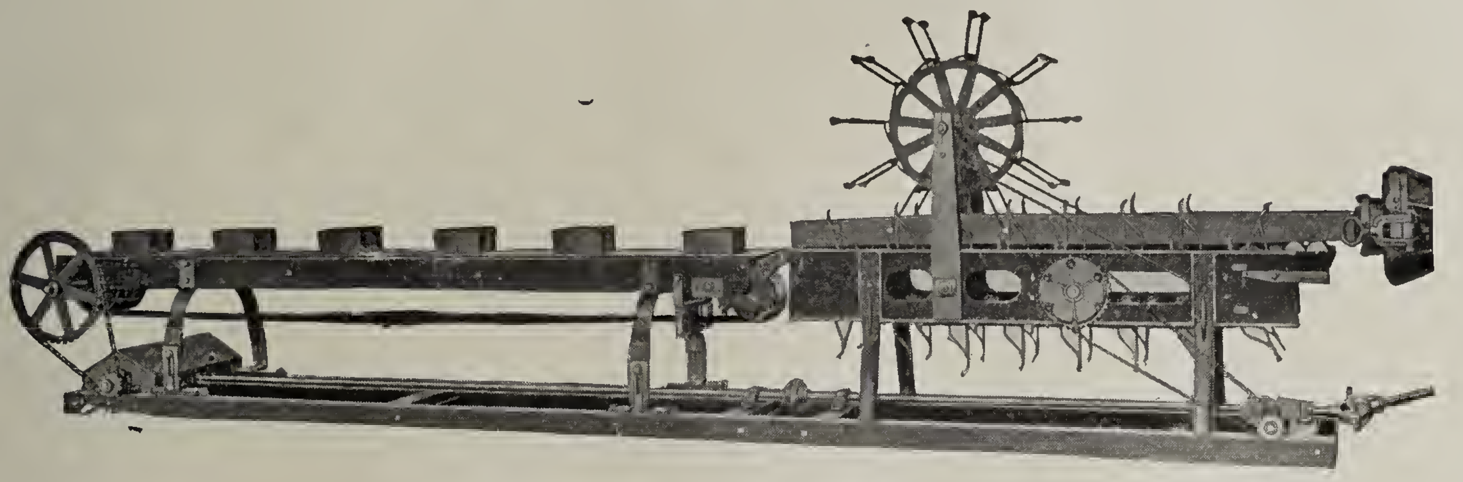
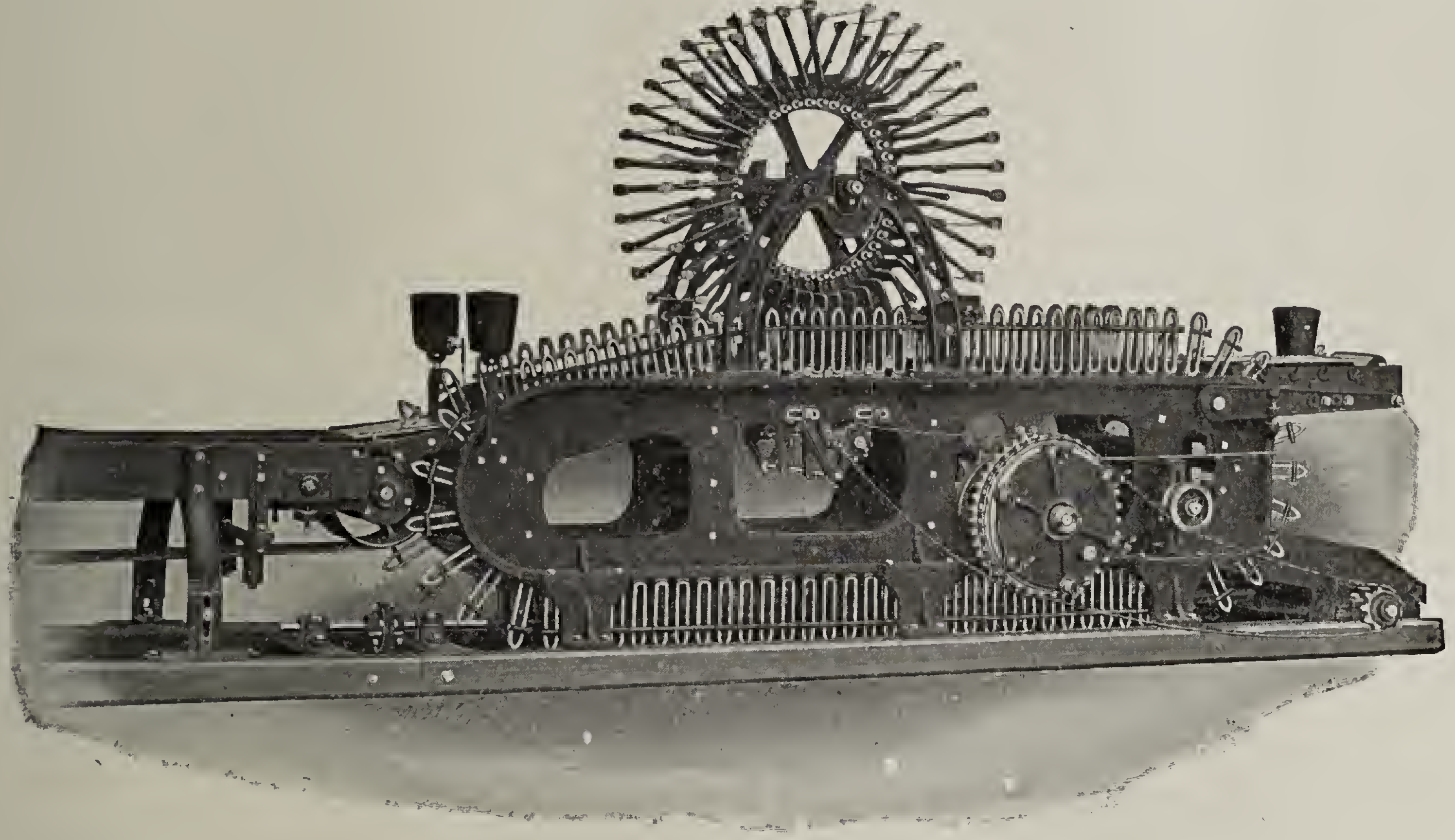


AUTOMATIC END CUT BRICK TABLE

The Standard Table the Country Over for cutting End Cut Brick, either solid or hollow. There is nothing to equal it for the Hollows.



AUTOMATIC SIDE CUT BRICK TABLE

This Table is rapidly being recognized as the one that is needed in many plants. It is the only successful one for cutting Tapestry or Mat Face Brick.

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The Justice Radiated Heat Dryer—Successful Results Always Certain

Brick and Clay Record Classified Ads are Result Producers

FOR SALE—SECOND-HAND MACHINERY.

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FOR SALE

LARGEST SIZE CHAMBERS MACHINE WITH side or end cutter, and indenting device. Apparatus is practically new and is in absolutely first-class condition. Western Brick Company, Danville, Ill. 12-2

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FOR SALE—One Freese combined pugger and brick machine, 30,000 capacity, has made but 150,000 brick; one Freese automatic cutting table, 60,000 capacity; good as new; 70 steel drier cars, roller bearing, in good shape; two steel automatic dump cars. Address: Carl Schuler, Millersburg, Ohio. 12-2.

CLAYWORKERS' CASTINGS—GREY IRON. Foundry castings—prompt delivery. Wm. E. Dee Co., Foundries and Machine Shops, Chicago and Harvey, Ill. All kinds clayworkers' castings, dies, dryer cars, grate bars, etc. Main office, 30 N. LaSalle St., Chicago, Ill. 9-4.

FOR SALE—One No. 2 Bonnot pugmill, vertical type, with 6-in. nozzle. Pugmill was run for three days. Too small for the work it was intended for. One 2-mold Boyd dry press. Run for three months, press good as new. Bought for experimental purposes and have no further use for it. All dies and extra parts go with press. The Niles Fire Brick Co., Niles, O. 12-2-2

FOR SALE—Brick machinery. 1 single die repress, 1 9-ft. dry pan, 1 Raymond brick machine, 1 Freese brick machine and pugmill combined, 50 ft. 4-in. shafting, 30 ft. 3 in. shafting, 25 pulleys, 12 in. to 8 ft., 1 hand cutter. J. P. Vogan, Franklin, Pa. 10-2-tf

FOR SALE—One 4-ton gasoline motor, one Horton sander, one Wellington sand dryer (good as new), one Hercules brick machine, 24 brick molds (nearly new), 153 steel dry cars with pallets for same, one Potts No. 2½ disintegrator. Address: Box 33, Muncie, Ind. 12-2-1

FOR SALE—20 h.p. portable engine, Quaker brick machine, Brewer conical roll crusher, 20,000 lath pallets 10x34 in., and racks for same. Barrows, trucks, etc., all in good condition. Will sell separately or as a whole. Cheap for cash. Geo. Schafer, Jr., Urbana, O. 12-2-1

SAND-MOULD BRICK MACHINERY—We are manufacturers of a complete line. Write for our latest catalog; we can take care of your wants. C. & A. Potts & Co., Indianapolis, Ind. 12-2-1

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FOR SALE—REBUILT MACHINERY.

FOR SALE—Locomotives and cars. Ten 12x16, 22 ton Porters, new 1910. One 11x16, 18 ton Pittsburgh. Thirty 9x14, 13 ton Porters. All of the above are 4-wheel saddle tank, 36-inch gauge engines, and have been thoroughly rebuilt in our shop here, and put in first-class condition throughout since last used. Dump Cars: 150, 36-inch gauge, 4-wheel, 5-yard, 2-way dump cars, practically all steel construction. The most substantial and best built car throughout that we have ever seen. All for immediate shipment. Write for prices and terms. Address: Minnesota Equipment Co., Hibbing, Minn. 10-TF.

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Boilers—stationary, firebox and vertical, all sizes, high and low pressure.
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Sole manufacturers of the celebrated Leader Injectors and Ejectors. Send us your requirements. We can fill them.
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In stock for immediate shipment.
Second-hand rails cut to any length desired for all purposes.
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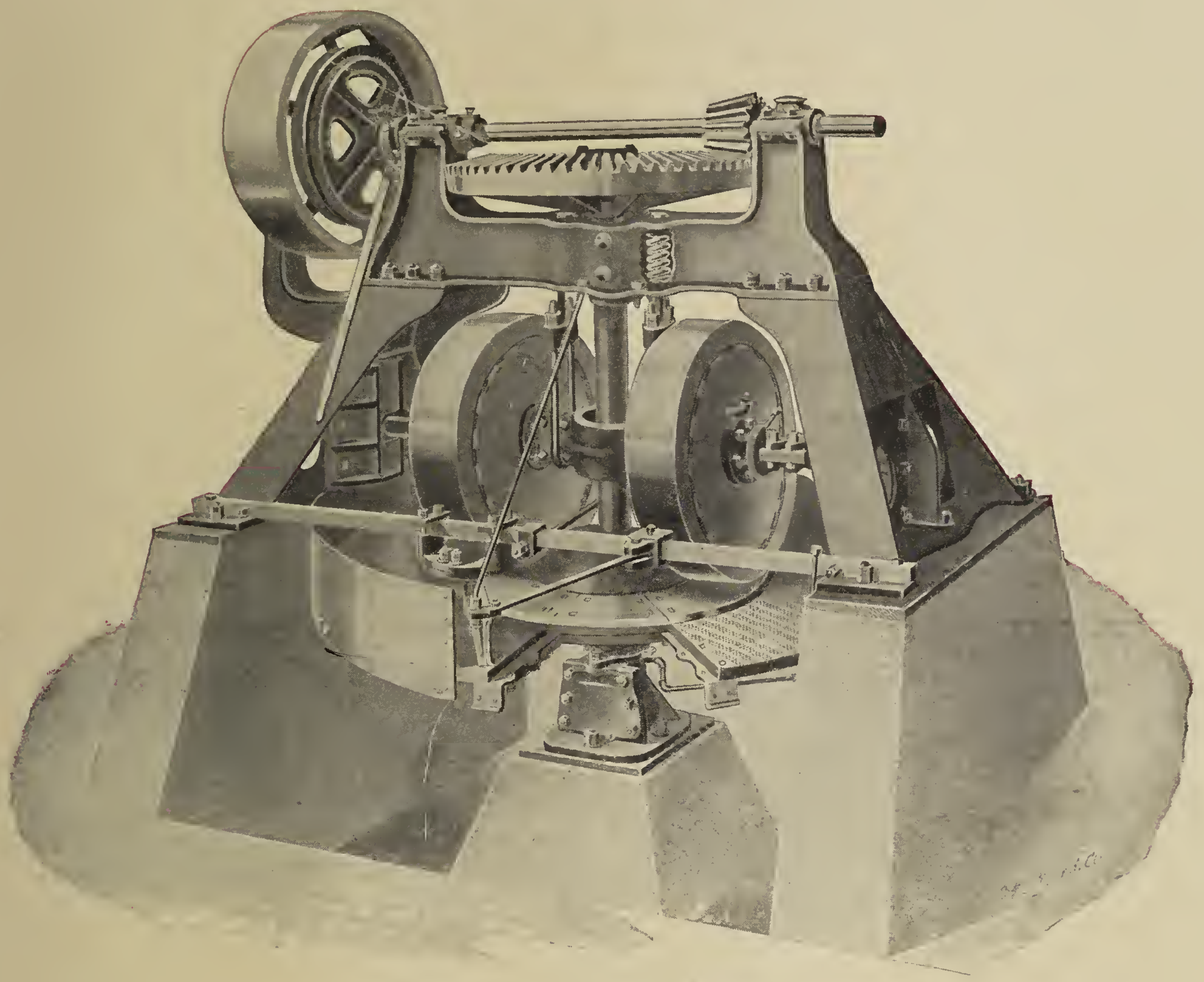

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Note Its Many Strong Points

Renewable Tires, 48″x10″. Split Hubs Easily Renewed. Split Bearing in Cross Tree. Split Bushing in Step. Step Bearing Easily Accessible. Spring Suspension of Mullers. Scraper Brackets Adjustable in All Directions. Extra High Rim. Large Gear Adjustable to Take Up Wear. Short Rigid "A" Frame. Grinding Plates Raised, thus Saving Breakage of Screen Plates and Giving Increased Wear of Grinding Plates.

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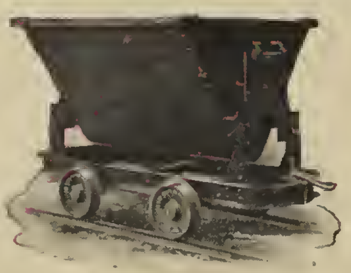
"Lakewood Line Cars"

For All Industries

Dump Cars, Dryer Cars and Rack Cars

Lakewood No. 241 Two-Way Dump Car



No. 241. Upright Position

No. 241. Partly Tilted for Loading

No. 241. Dumping Position

Strongly Built **Easy to Load** **Clean Discharge**

Lakewood Two-Way Dump Cars Are ALWAYS IN STOCK

The Ohio Ceramic Engineering Company

Cleveland, Ohio

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1202 Fulton Bldg., Pittsburgh
2622 Essex Place, Cincinnati, Ohio
A. D. Masson, 30 Nicholas St., Quebec

No. 7000

Storage Battery Truck

Will carry loads of 3,000 pounds.

Reduce Handling Cost

by the purchase of our STORAGE BATTERY TRACTORS AND TRUCKS.

Does the work of several men and horses and at much less cost. Operation very simple.

Wheels are equipped with solid rubber tires that require no rails to run on. Will operate on a fairly smooth floor.

You need a more efficient and economical method of transporting material about your plant. Let us prove to you that these machines will meet your requirements.

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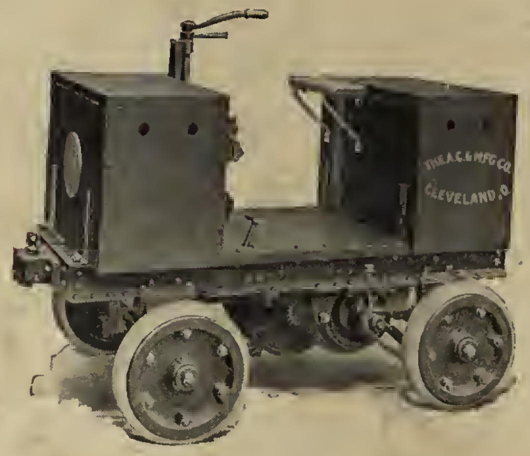
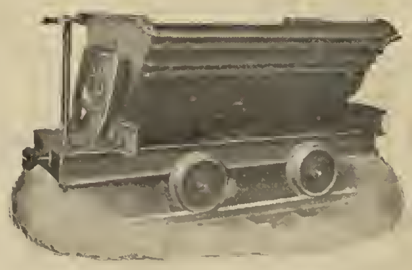
Complete Industrial Railway Equipment

We Will Build Equipment to Suit Your Conditions

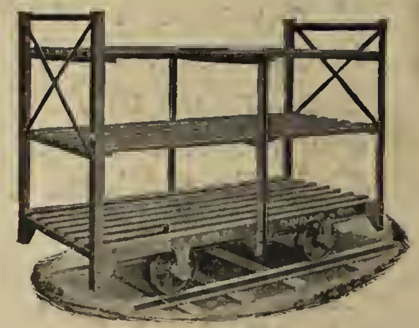


No. 7100
Storage Battery Tractor
Will haul 10 tons on level.



Rocker Side Dump Car

Also made in end dump. Above car made for loading with steam shovel.



No. 1205
Triple Deck Dryer Car supplied with or without decks of wood or steel.

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